

1 STATE OF MINNESOTA DISTRICT COURT
2 COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT
3 - - - - -
4 The State of Minnesota,
5 by Hubert H. Humphrey, III,
6 its attorney general,
7 and
8 Blue Cross and Blue Shield
9 of Minnesota,
10 Plaintiffs,
11 vs. File No. C1-94-8565
12 Philip Morris Incorporated, R.J.
13 Reynolds Tobacco Company, Brown
14 & Williamson Tobacco Corporation,
15 B.A.T. Industries P.L.C., Lorillard
16 Tobacco Company, The American
17 Tobacco Company, Liggett Group, Inc.,
18 The Council for Tobacco Research-U.S.A.,
19 Inc., and The Tobacco Institute, Inc.,
20 Defendants.
21 - - - - -
22 TRANSCRIPT OF PROCEEDINGS
23 VOLUME 51, PAGES 9989 - 10213
24 MARCH 31, 1998
25

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DIRECT EXAMINATION - DAVID E. TOWNSEND

1 P R O C E E D I N G S.
2 THE CLERK: All rise. Ramsey County
3 District Court is again in session, the Honorable
4 Kenneth J. Fitzpatrick now residing.
5 (Jury enters the courtroom.)
6 THE CLERK: Please be seated.
7 THE COURT: Good morning.
8 (Collective "Good morning.")
9 THE COURT: Counsel.
10 MR. WEBER: Thank you, Your Honor.
11 Good morning, ladies and gentlemen.
12 (Collective "Good morning.")
13 DAVID E. TOWNSEND
14 called as a witness, being previously
15 sworn, was examined and testified as
16 follows:
17 DIRECT EXAMINATION (cont'd)
18 BY MR. WEBER:
19 Q. Good morning, Dr. Townsend.
20 A. Good morning.
21 Q. Dr. Townsend, would you reach up to your right
22 and there's a collection of papers right at the top
23 of that stack, and is that what's marked as Exhibit
24 GJ000277A?
25 A. I'm sorry, I don't see a designation on it, sir.

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1 Q. Okay. Can you identify that document?
2 A. Yes, I can. It's a status report from June
3 1976, status report of Smoking and Health Program of

4 the National Cancer Institute.
5 Q. All right.
6 MR. WEBER: Your Honor, this was -- if
7 you'll remember yesterday, at tab 49 there was an
8 issue with respect to Exhibit AZ000993, and the court
9 directed us to make some further inquiry on that. We
10 have found that very document published by the
11 National Cancer Society in the 1976 status report and
12 provided a copy of the status report to the
13 plaintiffs, marked it as GJ000277A. There should be
14 a copy up there for Your Honor.
15 THE COURT: All right.
16 MR. WEBER: And I -- and I believe there's
17 no objection to the admission of GJ000277A under
18 803(8) as a publication of the National Cancer
19 Institute.
20 MR. CIRESI: That's correct, Your Honor.
21 THE COURT: All right. That will be
22 received.
23 BY MR. WEBER:
24 Q. Now Dr. Townsend, if you could turn to page 157
25 of GJ000277A, which is the 1976 status report of the
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1 National Cancer Institute Smoking and Health Program,
2 do you see there a set of minutes from a meeting
3 dated May 5, 1976?
4 A. That's correct, at page -- the cover page of the
5 minutes of meeting, May the 5th, 1976.
6 Q. And this is the same document we spoke about
7 yesterday AZ000993?
8 A. Yes, it is.
9 Q. Now --
10 And these are minutes prepared by the National
11 Cancer Institute for the meeting; correct?
12 A. That's correct.
13 Q. Now who were the attendees at this meeting?
14 A. There's a list on the front page. Dr. Gio Gori,
15 who of course headed that program; Howard Halter; I.
16 W. Hughes from Brown & Williamson; Charlie Keith from
17 Celanese, who was a supplier; Dr. Charlie Mattina;
18 Bill Metscher; Tom Osdene from Philip Morris; Tom B.
19 Owen from NCI, and I believe he was also secretary to
20 this program; Murray Senkus from R. J. Reynolds; Alex
21 Spears from Lorillard; and T. C. Tso from USDA.
22 Q. So there are two National Cancer Institute
23 employees at this meeting and one Department of
24 Agriculture?
25 A. That's correct.
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1 Q. Could you turn to page two.
2 A. You mean page 158?
3 Q. I'm sorry, yes. The next page in order, 158,
4 as -- as in the National Cancer Institute
5 publication. And could you read the section labeled
6 "PURPOSE OF MEETING."
7 A. Yes. "PURPOSE OF MEETING."
8 "Dr. Gori asked the consultants to consider the

9 feasibility of producing a cigarette yielding a
10 tar-to-nicotine ratio below 10. Since nicotine may
11 play a significant role as a determinant of smoking
12 behavior and also contributes to the organoleptic
13 qualities of the smoke, it is necessary to consider
14 this additional approach to less hazardous
15 cigarettes, i.e., a low tar/nicotine ratio, low tar
16 cigarette."

17 Q. And is this consistent with some of the
18 publications that you spoke about yesterday?

19 A. It's entirely consistent with those
20 publications.

21 Q. And these are minutes prepared by the National
22 Cancer Institute?

23 A. That's correct.

24 Q. Now, let's go down to "Feasibility and
25 Desirability," if we could, and could you read that

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1 to the ladies and gentlemen of the jury.

2 A. "It was the consensus of the group that an
3 effort to produce and test cigarettes with
4 tar-to-nicotine ratios of less than 10 is valuable
5 and should be conducted. In view of the manipulatory
6 potential of reconstituted sheet technology, such
7 cigarettes are feasible. It was noted that there is
8 currently at least one low tar/low nicotine cigarette
9 on the market which has a tar-to-nicotine ratio of
10 10.

11 "The source of the nicotine was questioned. Dr.
12 Tso stated that the source could be -- could be a
13 high-nicotine tobacco variety."

14 Q. Let me stop you there. Who is Dr. Tso
15 affiliated with who's discussing the high-nicotine
16 tobacco?

17 A. T. C. Tso is with the USDA, U.S. Department of
18 Agriculture.

19 Q. Okay. Go ahead.

20 A. "The maximum nicotine content is 7 percent and
21 although such tobacco also produces a great deal of
22 tar, it can serve as a nicotine source. The tar is
23 not a problem if the tobacco is stripped and suitable
24 quantities of the removed nicotine are added back to
25 a modified tobacco sheet. Extenders could also be

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1 used to reduce tar levels."

2 Q. All right. Could you go over to the top of the
3 next page then, which continues to report on Dr. Tso
4 from the Department of Agriculture and -- and his
5 discussion.

6 A. Right. The top of 159 Dr. Tso indicated -- or
7 "As Dr. Tso indicated, a high nicotine, high tar
8 tobacco could possibly deliver a tar-to-nicotine
9 ratio of less than 10. The discussion then focused
10 on the question of the tar quantity as well as the
11 magnitude of the ratio. This then led to a
12 discussion of modified tobacco sheet enriched in
13 nicotine salts obtained from tobacco inputted to sheet

14 making processes."
15 Q. Now as a cigarette designer, what does modified
16 tobacco sheet enriched in nicotine salts, what would
17 that be referring to?
18 A. Well I think that's -- that's referring to
19 reconstituted tobacco that has nicotine salts or
20 nicotine materials added to it.
21 Q. And this is Dr. Tso talking at the meeting.
22 A. Yes.
23 Q. Now could you go to the next paragraph labeled
24 "Nicotine Nature and Delivery."
25 A. Sure. "This was the pivotal issue discussed at
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1 the meeting. Nicotine has the greatest pharmacologic
2 effect" -- or "activity when it is in the free base
3 form. The base form is also the 'distillable' form
4 which readily transfers to cigarette smoke. It was
5 suggested that the form of the nicotine could be
6 critical in a) efficiency of transfer to smoke as
7 base nicotine with minimal transformation to 'tar'
8 and b) physiological impact which depends on the
9 base/salt nicotine ratio in the smoke aerosol, paren,
10 the base/diprotic salt ratio has a logarithmic
11 dependence on smoke pH and the two pKb's for
12 nicotine, end paren."
13 Q. And the next paragraph.
14 A. "The question of which salt to add to the
15 modified sheet was also raised. Nicotine citrate and
16 tartrate were mentioned (other less acceptable salts
17 include the acetate, oxalate, and some other nicotine
18 salts of carboxylic acids)."
19 Q. What was the National Cancer Institute
20 discussing or recommending here for research?
21 A. They were certainly suggesting that the form of
22 the nicotine was an area of research toward this
23 overall objective.
24 Q. And the date of this, again, Dr. Townsend?
25 A. 1976.

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1 Q. Now let me go back to ask one question on that
2 first page of the minutes where it was "PURPOSE OF
3 MEETING." Do you see that?
4 A. Yes.
5 Q. And it talks about how nicotine may play a role
6 in smoking behavior and also contribute to the
7 organoleptic qualities. Could you describe what that
8 means.
9 A. Yes. Nicotine does exhibit a mild pharmacology,
10 and it may influence to a degree smoker compensation.
11 I believe that other term -- earlier -- other factors
12 may also influence how a person smokes, including the
13 tar level, the taste of the tar, and as I indicated
14 yesterday, even the pressure drop of the cigarette
15 can alter the way a person puff -- person puffs on
16 the cigarette. It's kind of hard to say together. I
17 think the role of nicotine in -- in how a person
18 smokes is important. I also think the organoleptic

19 qualities, as it's said here, is also important,
20 because nicotine does exert a sensory effect in the
21 oral cavity and upper respiratory tract; it's an
22 irritation, a sensory irritation a lot like
23 carbonation in a -- in a soft drink.

24 Q. Now we talked yesterday about recommendations of
25 this type for research in the 1981 Surgeon General's

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1 report, the Banbury report, and other articles, and I
2 believe at the end of the day I asked you if R. J.
3 Reynolds had done research along the lines contained
4 in these suggestions; correct?

5 A. That's correct.

6 Q. And was the Reynolds research that was done
7 along these lines consistent with the concepts and
8 suggestions that we've been describing in the
9 literature yesterday?

10 A. Yes. The research that R. J. Reynolds has
11 conducted along these lines is entirely consistent
12 with this approach and also the discussions from
13 yesterday. It involved actually several different
14 projects over a number of years to try to -- to
15 change or break the tar-to-nicotine ratio. There's
16 also been research looking, of course, at pH and the
17 effects of that, and several of the projects that
18 were conducted at Reynolds include projects like --
19 well by code name GT, XGT, XB, and even a project
20 named Russell.

21 Q. Was there also a project called REST, R-E-S-T?

22 A. There was. There was a project in the early
23 '90s -- or it may have begun in the late '80s and --
24 and into the early '90s -- called REST, which stands
25 for ReEquilibration of Solubles in Tobacco.

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1 Q. And what was --

2 Why was the REST project undertaken? What was
3 the purpose of its initiation?

4 A. The original objective was to process tobaccos
5 to reduce the nicotine level, and about that time,
6 that timeframe, one of our competitors was exploring
7 very low nicotine cigarettes, so we saw this as a
8 possible tool for us to compete with -- with another
9 cigarette company by reducing the levels of nicotine.

10 Q. As REST continued, were there other potential
11 applications for it?

12 A. Well there certainly were. And -- and let me
13 just briefly tell you what REST was. The idea was to
14 separate solubles and the solids or the -- the
15 polymers in tobacco and then somehow process -- process
16 either the extract to reduce nicotine. Another
17 objective was to increase nicotine consistent with
18 the theories that we've been talking about. Another
19 approach would be to process the pulp or the -- the
20 fibers that are left over after extraction to somehow
21 reduce the protein levels to hopefully reduce
22 constituents in smoke that were thought to be a
23 problem potentially. Another is to process the

24 extract in certain ways, again to reduce constituents
25 in smoke, to address smoking-and-health issues. So I
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1 think there were a number of objectives as the
2 development of REST continued. The original one,
3 however, was to reduce nicotine.
4 Q. Did any of this research along these lines we've
5 been talking about result in patents for R. J.
6 Reynolds?
7 A. There are a number of Reynolds patents in the
8 REST process and also in the XB, XGT, and the medium
9 nicotine/low tar projects.
10 Q. Now were any of these concepts that have been
11 patented, the type of research you've been talking
12 about right now, were -- were any of those research
13 efforts, did they result in product that was
14 commercialized; that is, product that was made as a
15 commercial cigarette and sold on the market?
16 A. We've not been able to commercialize products
17 resulting from these projects because they haven't
18 achieved a good consumer acceptability at this point.
19 The medium tar/low -- the medium nicotine/low tar
20 products, we've made some progress in those projects,
21 but they're still not consumer acceptable. The REST
22 project actually was discontinued then; there was no
23 commercial application of it as well.
24 Q. Is research in these areas still continuing?
25 A. Yes, very definitely.

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1 Q. Now yesterday we talked about the tobacco
2 expansion process. You remember that?
3 A. Yes.
4 Q. And you mentioned how that process changed
5 around 1988.
6 A. Yes.
7 Q. Could you explain how the process was changed.
8 A. As I indicated yesterday, there were
9 environmental concerns about freon, which was the
10 expansion agent we used for our G -- what we called
11 the G13 process, the expansion process, so with these
12 environmental concerns, we began in the -- in the
13 late '80s to explore alternatives. R. J. Reynolds
14 did make a decision in the late '80s, right around
15 1988 or thereabouts, to -- to discontinue the use of
16 freon expansion. We explored a variety of options,
17 including some processes that we were trying to
18 develop in-house as replacements, we evaluated other
19 processes that some of our competitors used, and then
20 finally did make a decision, as I said, in the late
21 '80s, to discontinue that process, and we made the
22 decision to license a process from one of our
23 competitors, a process that uses carbon dioxide as
24 the expansion agent. That was implemented in the
25 early '90s, became commercial in the early '90s.

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1 Q. Now continuing on this issue of tobacco
2 processing, you mentioned, I believe yesterday, that
3 ammonia was used in processing reconstituted tobacco
4 sheet.
5 A. Yes.
6 Q. And then reconstituted tobacco sheet is put in
7 as part of a blend in the cigarette?
8 A. That's correct.
9 Q. When did Reynolds begin to examine the potential
10 effect of ammonia on smoking tobacco?
11 A. Some of the earliest experiments at Reynolds
12 were in the '50s. Scientists were looking at the
13 effects of ammonia on smoke chemistry and on taste,
14 on changes to taste characteristics of the tobacco.
15 Q. Could you turn to tab 59, AT000595. Do you have
16 that one, doctor?
17 A. Tab 59?
18 Q. Yes.
19 A. Yes.
20 Q. And is that AT000595, an October 6, 1954
21 memorandum by Harry Snyder?
22 A. That's correct, it is.
23 Q. And was this created and maintained in the
24 regular course of Reynolds' business?
25 A. Yes, this is a Reynolds document.

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1 MR. WEBER: Your Honor, I move the
2 admission under 803(16) and 803(6).
3 MR. CIRESI: No objection, Your Honor.
4 THE COURT: Court will receive AT000595.
5 BY MR. WEBER:
6 Q. Now can you briefly describe the substance of
7 this document, which is entitled "USEFUL BY-PRODUCTS
8 OF STEM AMMONIATION" and dated October 6, 1954.
9 A. The work that's summarized here is the work to
10 improve smoking quality of tobacco stems through the
11 use of adding ammonia, and in particular using
12 gaseous ammonia, or that's the most extensive piece
13 of the work. Tobacco stems generally have, in
14 themselves, poor smoking qualities. The intent here
15 was to see if adding ammonia could improve the
16 smoking qualities because there was some research
17 even at that time that suggested that ammonia and
18 sugars could react and form flavorful -- flavorful
19 compounds.
20 Q. Now when did --
21 I think you said yesterday that the first use of
22 ammonia process and reconstituted sheet at Reynolds
23 was in the Camel Filter in 1974?
24 A. The first commercial use was in Camel Filter in
25 1974.

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1 Q. Was there anything going on in the marketplace
2 in that era that caused Reynolds to evaluate whether
3 it ought change its cigarette processing or its
4 blend?

5 A. Well there was something going on in the
6 marketplace. One of our competitors had -- had a
7 product, the name of it was -- is Marlboro. Marlboro
8 was doing extremely well in the market compared to
9 our products, and Marlboro we thought -- our
10 researchers thought at the time had added ammonia to
11 it.

12 Q. Does ammonia processing affect the smoking
13 quality of reconstituted tobacco sheet?

14 A. Certainly does. What we know now is that -- is
15 that ammonia reacts -- does react with sugars and --
16 and forms a number of different flavor -- flavorful
17 compounds, particularly a class of compounds called
18 pyrazines, which are heterocyclic rings with two
19 nitrogens at opposite ends on them. Pyrazines are
20 formed very efficiently in -- in baking and cooking
21 of foods, too, where ammonia is heated in the
22 presence of certain endogenous sugars.

23 So it does affect the smoking qualities, it does
24 affect the taste characteristics.

25 Q. I want to discuss some examples of Reynolds

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1 analysis of ammonia on smoking quality. Can you turn
2 to tab 61, which is Exhibit AZ000852.

3 A. Sure.

4 Q. Do you have that?

5 A. Yes, I do.

6 Q. Is that a document that was created and
7 maintained by Reynolds in the ordinary course of
8 business?

9 A. This is a Reynolds document.

10 Q. And is it dated from 1976?

11 A. The report is dated January 29th, 1976.

12 MR. WEBER: Your Honor, I'd move the
13 admission of AZ000852 under 803(6) and 803(16).

14 MR. CIRESI: No objection as a business
15 record, Your Honor.

16 THE COURT: Court will receive AZ000852.

17 BY MR. WEBER:

18 Q. And the title of this document is what, Dr.
19 Townsend?

20 A. The title is "EFFECT OF TREATMENT OF TOBACCO
21 WITH AMMONIA OR VARIOUS AMMONIUM SALTS ON THE LEVELS
22 OF PYRIDINES AND PYRAZINES IN SMOKE."

23 Q. Could you turn to the abstract of the article on
24 page three. And is this intended to be a summary of
25 the research?

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1 A. This is intended to be a summary or an abstract
2 of what's in this document.

3 Q. Now without reading us through all these
4 chemical names, which I know I couldn't pronounce,
5 could you explain what this abstract -- the point --
6 the scientific and chemical point this abstract is --
7 is discussing.

8 A. This abstract summarizes for the reader that the
9 treatment of tobacco products with ammonia or

10 ammonium salts produces -- well, to use these
11 words -- one or more changes in tobacco composition,
12 and then goes on to summarize a number of -- of
13 constituents in smoke that were studied. And the
14 effects of ammonia treatments on tobacco
15 production -- of tobacco products on the levels of a
16 whole list of constituents were evaluated, and many
17 of these were in fact increased as a result of
18 ammoniation. These compounds were largely pyrazines,
19 as I described before, an aromatic ring with two
20 nitrogens at opposite ends, also pyridines and a
21 number of other constituents, many of which were
22 thought to be highly flavorful.
23 Q. Could you turn to page 15, and there's a
24 discussion of a competitive brand analysis.
25 A. Yes.

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1 Q. And in the -- at the paragraph there that begins
2 "Examination...", do you see that?
3 A. Yes.
4 Q. Can you tell us what was observed in this
5 research study with respect to the ammoniation issue
6 and some of these flavorful compounds.
7 A. Okay. The discussion in this section, of
8 course, deals with competitive brands. The first
9 point is that "Unfiltered Marlboro smoke shows
10 elevated levels of pyrazines and pyridines compared
11 to unfiltered WINSTON smoke." So Marlboro compared
12 to Winston did have higher levels of these flavorful
13 compounds.
14 Second, "Filtered Marlboro smoke shows elevated
15 levels of pyrazines and pyridines when compared with
16 filtered WINSTON smoke, but the pyridine level
17 elevation is not as pronounced as that of the
18 pyrazines." Okay. So even with a filter, Marlboro
19 was showing higher levels of these compounds.
20 Third, "Unfiltered Kools and SALEMS show almost
21 identical profiles for pyrazines and pyridines in
22 their smokes." So again, it was a comparison of two
23 menthol brands, two very popular menthol brands on
24 the market; those two were very similar.
25 And then finally "Filtered Kool smoke shows

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1 substantially lower levels of both pyrazines and
2 pyridines than filtered SALEM smoke." So for
3 filtered products, Kool and Salem were slightly
4 different and Kool had less of those compounds.
5 So our scientists were trying to understand
6 differences of the products in the marketplace and
7 the levels of these pyrazines and pyridines as
8 constituents.
9 Q. Now if you could go to the next page where they
10 did a smoke analysis of competitive brands.
11 A. That's page 16?
12 Q. Right.
13 A. Yes.
14 Q. And I'd like to focus you on the line there

15 toward the middle of the smoke analysis that refers
16 to pH.
17 A. Yes.
18 Q. What's the --
19 There's an average minimum and an average
20 maximum reading. Could you explain that.
21 A. Over the years at Reynolds we've had at least
22 three different methods for measuring pH. One of the
23 methods actually determined for a given sample a
24 minimum pH and then a maximum pH because the pH
25 changed during the course of the measurement. So
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1 these numbers are -- are representing for that
2 measurement the minimum value that's recorded and the
3 maximum value that's recorded.
4 Q. And focusing on the maximum for a moment and --
5 And these are measurements of commercial
6 cigarettes?
7 A. These are measurements for four commercial
8 cigarettes that we just referred to on the previous
9 page.
10 Q. And is the measurement of pH for any of those
11 commercial cigarettes over 6.5?
12 A. No. No, they're not.
13 Q. Now could you turn to tab 62, which is AT000714.
14 A. Okay.
15 Q. And is that a 1980 document prepared by Casey
16 and Perfetti entitled "METHOD TO IMPROVE QUALITY OF
17 TOBACCO VIA SUGAR-AMMONIA REACTIONS?"
18 A. It is.
19 Q. And was that created and maintained in the
20 regular course of Reynolds' business?
21 A. This is an R. J. Reynolds document.
22 MR. WEBER: Your Honor, I'd move this into
23 evidence under 803(6).
24 MR. CIRESI: No objection, Your Honor.
25 THE COURT: Court will receive AT000714.
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10010

1 BY MR. WEBER:
2 Q. Now Dr. Townsend, could you explain this
3 research here where they're talking about
4 sugar/ammonia reactions.
5 A. It's similar to what we were talking about on
6 the last -- in the last document, that sugar and
7 ammonia, even added ammonia, can react to form
8 flavorful compounds. These authors were looking
9 at -- at briefly some smoke chemistry, but then took
10 those products and did some smoker evaluations on an
11 internal taste panel test. As a result of these
12 taste panel works they found that, compared to a
13 control, the ammoniated cigarettes tended to get
14 better -- better scores on smoothness, so that the
15 ammoniated products were judged by smokers as
16 smoother, less strong, and better flavor.
17 Q. Could you go to the concluding paragraph of that
18 memorandum and read that to the ladies and gentlemen.
19 A. Yes. On page three the authors say, "It is the

20 authors belief that the above treated flue-cured
21 tobacco produced a smoother, more flavorful cigarette
22 because of the low temperature, sugar-ammonia
23 reactions which were allowed to take place on the
24 surface of the tobacco leaf before incorporation of
25 the flue-cured tobacco into the blend."

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1 Q. Now Dr. Townsend, could you turn to tab 63,
2 which is AT000700. Do you have that?

3 A. Yes.

4 Q. Is that a quarterly report from 1982 from C. R.
5 Green to Mary Stowe?

6 A. It is a quarterly report from Dr. Charlie Green
7 to Dr. Stowe.

8 Q. Were quarterly --

9 A. 1982.

10 Q. I'm sorry.

11 Were quarterly reports prepared, created and
12 maintained in the regular course of business during
13 that period?

14 A. Yes, they were.

15 MR. WEBER: Your Honor, I'd move the
16 admission of AT000700 under 803(6).

17 MR. CIRESI: No objection, Your Honor.

18 THE COURT: Court will receive AT000700.

19 BY MR. WEBER:

20 Q. Now what's the subject of this report?

21 A. This quarterly report speaks to tobacco
22 ammoniation.

23 Q. And if you could go to the second paragraph on
24 that page, what does --

25 Read the first few sentences to -- regarding Dr.

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1 Green's position as to the effect of ammoniation of
2 tobacco on smoke.

3 A. Okay. "There is general agreement that
4 ammoniation of tobacco has two general effects on its
5 smoking properties. Compared to an untreated
6 control, the smoke of an ammoniated product is milder
7 and less irritating. A key step to observation of
8 less irritation from ammoniated products is the
9 removal of excess unreacted ammonia from the treated
10 tobaccos. This has been accomplished by either a
11 waiting period between ammoniation and use or by
12 steaming the ammoniated tobaccos. Concurrent with
13 the reduction in irritation, ammoniated tobaccos
14 produce a smoke with altered flavor and aroma
15 properties. The flavor becomes more chocolate-like
16 and this is associated with the presence of higher
17 levels of smoke pyrazines. Because of these flavor
18 changes, ammoniated tobaccos are generally regarded
19 as being more burley-like. This factor must be
20 considered in the use of treated tobaccos as part of
21 cigarette blends. The attributes of ammoniated
22 tobaccos, less irritation and more chocolate flavor,
23 have also been used to describe major product
24 differences between our products and those of our

25 major competitor. We do not know if this gives them
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1 a competitive advantage in the marketplace."

2 Q. And do you understand -- have an understanding
3 as to who that major competitor is that's being
4 referred to?

5 A. The major competitor that's being referred to
6 there is clearly Marlboro, produced by Philip Morris.

7 Q. Could you go to the next page on that
8 memorandum, the last paragraph. I want to ask you a
9 question about that. It says, "Interrelated with the
10 study of tobacco ammoniation is tobacco
11 denicotinization. This process can achieve some of
12 the same smoking quality improvements as ammoniation
13 through a reduction in smoke nicotine. In fact
14 some" --

15 I better read it from here. It's better.

16 "In fact some some processes which result in
17 improved smoking quality are both a tobacco
18 ammoniation and denicotinization. It is not clear
19 whether the smoking quality improvement is due to
20 either or both treatments."

21 And let me ask you this: Did Reynolds have in
22 place an ammonia process that was used for the
23 denicotinization of tobacco?

24 A. We did have a commercial process called KDN or
25 burley denic which used ammonia and steam to reduce

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1 the nicotine levels in burley tobacco.

2 Q. And when Reynolds was using that process, how
3 did the use by weight of ammonia for the
4 denicotinization process compare to the use of
5 ammonia in the processing of reconstituted sheet?

6 A. I think it was much, much higher than levels
7 used in reconstituted tobacco.

8 MR. CIRESI: I'm going to move to strike,
9 there's no foundation. He's thinking. We have no
10 documents for this, Your Honor.

11 THE COURT: Yeah. You'll have to lay
12 foundation for that.

13 BY MR. WEBER:

14 Q. Do you have --

15 Based on your 20 years at R. J. Reynolds, do you
16 have knowledge as to how much ammonia was used in the
17 denicotinization process by weight as opposed to how
18 much was used in the RTS process?

19 A. Certainly as knowledgeable in -- in the area of
20 cigarette design and -- and tobacco processing, I
21 have a general knowledge of that. I can't sit here
22 today and give you a concrete, hard number. But in
23 the de -- in the burley denic process, there was far
24 more ammonia added to remove nicotine along with the
25 steam, far more ammonia added than we -- than we add

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1 in reconstituted tobacco.
2 MR. CIRESI: Once again, Your Honor, we'd
3 move to strike. There's no foundation for that
4 testimony. We need to know what the formulas are and
5 the specifications.
6 THE COURT: Okay. Can you lay foundation
7 for the statement, give us something?
8 MR. WEBER: I -- you know, based on his
9 experience and his knowledge from working there,
10 which -- which I assume -- I had felt was enough
11 foundation. If it's not, I'll move on, Your Honor.
12 MR. CIRESI: Move to strike the answer.
13 THE COURT: All right. I'll let the answer
14 stand.
15 BY MR. WEBER:
16 Q. Can you now turn to 64, tab 64, which is Exhibit
17 AT000705.
18 A. Sure.
19 Q. And can you identify that as a memorandum dated
20 February 13, 1987 to -- or from Dr. Appleton to Dr.
21 Hayes?
22 A. That's correct. It's 1987 memorandum from Dr.
23 Appleton to Wally Hayes.
24 Q. And is this a document that was created and
25 maintained in the regular course of Reynolds'
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1 business?
2 A. This is a Reynolds document.
3 MR. WEBER: All right. Now I'd move the
4 admission of AT000705 under 803(6), Your Honor.
5 MR. CIRESI: No objection, Your Honor.
6 THE COURT: Court will receive AT000705.
7 BY MR. WEBER:
8 Q. Now it starts out with an unusual title. What
9 does the title refer to?
10 A. The subject of this memorandum is "Information
11 Summary on Ammoniation."
12 Q. Up in the upper left-hand corner. And then it
13 goes on to talk about effect of ammoniation on
14 peanuts?
15 A. Yes. In the summary it says, "There is no
16 indication in the literature that ammoniation of
17 peanuts would pose a human health hazard."
18 Q. And the background paragraph reads, "Ammonia is
19 a normal body constituent which participants in many
20 of the body's metabolic processes. It is also found
21 naturally in many foods."
22 A. That's correct.
23 Q. And did Dr. Appleton then go on to discuss both
24 ammoniation of tobacco and ammoniation of foods?
25 A. Yes, he did.

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1 Q. Let's focus on the ammoniation-of-tobacco part,
2 and let me read a little bit of this and I'll ask you
3 a question.
4 "Tobacco is ammoniated to remove nicotine and to
5 develop desirable smoking and flavor characteristics.

6 Ammoniation has been reported to increase the
7 quantities of nitrogen-containing organic compounds,"
8 paren, and I'll skip the chemicals, "in tobacco smoke
9 condensate."

10 Then it goes on, the next paragraph, "Pyrazines
11 formed during ammoniation of tobacco (and presumably
12 foods) occur naturally in a variety of roasted foods.
13 Since their flavor intensity is relatively high,
14 their consumption in foods is self limiting.
15 Subchronic feeding studies on 15 pyrazines
16 representative of the class of pyrazines compounds
17 commonly used as flavors indicate that these
18 compounds are not hazardous when consumed in the
19 amounts commonly found in foods."

20 Did I read that correctly, doctor?

21 A. You read that accurately.

22 Q. Now he goes on in the next paragraph to talk
23 about data with respect to ammoniation of tobacco;
24 does he not?

25 A. Yes.

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1 Q. And he says ammoniation has been found to
2 increase the mutagenic activity of cigarette smoke
3 condensate in Salmonella typhimurium, and does that
4 refer to the Ames test?

5 A. That is the Ames test he's speaking about.

6 Q. Then it goes, "Mouse skin painting studies
7 conducted by the NCI indicate that CSC," Cigarette
8 Smoke Condensate, "from tobacco expanded by the
9 Philip Morris ammonium carbonate process has less
10 tumor initiating activity than CSC from reference
11 cigarettes." See that?

12 A. Yes.

13 Q. And is that one of the conclusions from the
14 tests that we talked about yesterday?

15 A. From the NCI TWG studies, yes.

16 Q. Now this last --

17 Could you read that last paragraph.

18 A. Sure. "These studies indicate that ammoniation
19 does not have an adverse impact on the in vivo
20 biological activity of cigarette smoke. Although
21 ammoniation appears to increase the Ames mutagenicity
22 activity of CSC," Cigarette Smoke Condensate, "this
23 seems to have little relevance to tumor initiating
24 activity in the mouse skin painting model. This last
25 conclusion is further supported by the reported

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1 observations that CSC from flue cured tobacco has
2 less Ames activity but greater mouse skin tumor
3 initiating activity than CSC from burley tobacco."

4 Q. Now if ammoniation has this effect of improving
5 smoking quality, why isn't all of the Reynolds
6 product, in every brand, in every style, using
7 ammoniated reconstituted tobacco sheet?

8 A. Because smokers want different smoke
9 characteristics, and that's why there are a number of
10 different brands in the marketplace, because smokers

11 prefer not only different tar levels and different
12 nicotine levels, but they also prefer different
13 overall taste characteristics. And some of the --
14 some of the smokers who purchase Reynolds brands
15 actually prefer the smoother, milder, more flavorful,
16 chocolate-like, more burley-like taste from
17 ammoniated tobaccos, and some don't. So we offer
18 products for consumers that are different.

19 And in fact, more of the brand -- more of the
20 products that we sell are not ammoniated than are.

21 Q. Now on the same subject here of ammonia in
22 sheet, you said yesterday that reconstituted tobacco
23 sheet might constitute somewhere in the neighborhood
24 of 15 to 25 or maybe 30 percent of a blended
25 cigarette.

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1 A. The typical range is about 15 to 25 percent. On
2 occasion there's been slightly higher inclusions for
3 a few small brands. There's 15 to 30 percent to be
4 conservative.

5 Q. So that 70 to 85 percent of the blend does not
6 consist of reconstituted sheet.

7 A. That's correct.

8 Q. And that 75 to 80 percent has not been subject
9 to ammonia processing.

10 A. That's correct.

11 Q. Now in a cigarette that has part of its blend as
12 reconstituted sheet, what percentage by weight of the
13 cigarette consists of ammonia from the RTS process?

14 MR. CIRESI: Objection as to time, Your
15 Honor.

16 THE COURT: Can you be a little more
17 specific as to the time?

18 MR. WEBER: Can -- let me approach it this
19 way.

20 BY MR. WEBER:

21 Q. Let's take --

22 Can you talk in the last 10 years, let's say in
23 the '80s.

24 A. Yes.

25 Q. And if that's not a number or a time period

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1 you're comfortable with, you can do '90 to '94. Do
2 you know what the percentage by weight of ammonia in
3 a cigarette that incorporates as part of its blend
4 reconstituted tobacco sheet that has been processed
5 with ammonia?

6 MR. CIRESI: Once again, Your Honor,
7 there's no foundation. It's vague and overbroad as
8 to time. We don't know which cigarette, what the
9 formula or specifications for that cigarette are,
10 what type of tobacco is being used, at what year it's
11 being used. Those all change.

12 THE COURT: You can answer the question.

13 A. Let me -- let me make clear a particular
14 timeframe, because I have looked at actual data.
15 And -- and in the early '90s, for example, up to

16 '94, certainly in the early '90s, the ammoniated
17 products --
18 THE COURT: Counsel, excuse me. I hate to
19 interrupt you, but I believe the question was
20 directed to the '80s; isn't that right?
21 MR. WEBER: Right. And I -- I then also
22 said about '90 to '94. Let me rephrase it then, Your
23 Honor.
24 THE COURT: Maybe let's take them one at a
25 time anyway. I think it's very confusing.

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1 MR. WEBER: All right. Thank you.
2 THE COURT: Are we talking about the '80s
3 or the '90s anyway.
4 MR. WEBER: Let me -- thank you, Your
5 Honor, for helping me clarify the record on this.
6 BY MR. WEBER:
7 Q. Let me talk about the early '90s, before -- up
8 to the middle of '94. Do you know what percentage by
9 weight in a blended cigarette consisted of ammonia
10 that came from ammonia processing?
11 A. Yes. In general the levels for products sold --
12 manufactured and sold by R. J. Reynolds was on the
13 order of about .15, maybe as high as .2 percent by
14 weight ammonia.
15 Q. So that's in --
16 .2 percent would be one-fifth of one percent?
17 A. That's correct.
18 Q. Now does this amount of ammonia from the RTS
19 process, some of which RTS tobacco is put into a
20 blended cigarette, does this increase the pH of smoke
21 in Reynolds' commercial products?
22 MR. CIRESI: Objection, Your Honor, this
23 implicates the court's orders, I believe.
24 MR. WEBER: Doesn't deal with --
25 It simply deals with matters he knows from

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1 working there, Your Honor. It doesn't deal with
2 those exhibits they've objected to. I've marked in
3 here a point soon where we will need to discuss that
4 issue.
5 MR. CIRESI: We have no foundation for
6 this.
7 THE COURT: All right. I'll allow him to
8 answer.
9 A. At the levels of ammonia we use in our
10 commercial products, we do not see an increase in pH
11 in the smoke.
12 Q. Does the use of ammonia affect the taste and
13 sensory characteristics though?
14 A. The use of ammonia definitely influences the
15 taste and sensory characteristics of the smoke.
16 Q. Now I need another exhibit, and I'll have to --
17 Bear with me for just a moment. Oh, here they
18 are. Excuse me, ladies and gentlemen.
19 Could you turn to tab 95 -- excuse me, to the
20 1979 Surgeon General's report. Let's start with

21 that, page 14-108. And I think that chapter is
22 separately bound on the right, Dr. Townsend, in
23 that -- perhaps in the manila folder. And that is, I
24 believe, PX3836.

25 MR. WEBER: Excuse me, Mr. Ciresi.

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1 (Easel moved by Mr. Weber.)

2 A. I'm sorry, what page are we on?

3 Q. 14-108. And I'd like you to look at the
4 left-hand column there, and five, six lines up from
5 the bottom, do you see a sentence that begins
6 "Since...?"

7 A. Sure.

8 Q. Now could you tell me --

9 Could you read that sentence for the ladies and
10 gentlemen of the jury.

11 A. Sure. "Since cigarettes in the United States
12 and in most foreign countries are made of flue-cured
13 tobacco, are blends with flue-cured tobacco as a
14 major ingredient or, in a few cases, are blends with
15 Turkish tobacco, the pH of the resulting mainstream
16 smoke is below 6.5 and thus essentially contains only
17 protonated nicotine. Nicotine salts, however, are a
18 part of the particulate matter and are, therefore,
19 not amenable to significant selective filtration."

20 Q. Now --

21 So in 1979, the Surgeon General said that
22 cigarettes in the United States have a pH of
23 mainstream smoke below 6.5; correct?

24 A. That's what it says here.

25 Q. And then it goes on to say "and thus contains

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1 essentially only protonated nicotine." What does
2 that mean?

3 A. It means virtually all of the nicotine is in the
4 form of the salt form, which resides -- which
5 necessarily resides in the particles or in the
6 particulate phase.

7 Q. Is protonated nicotine bound nicotine? Is that
8 another word for it?

9 A. Protonated nicotine is bound nicotine. They're
10 used interchangeably.

11 Q. And unprotonated is the free nicotine?

12 A. Unprotonated is the free nicotine, that's
13 correct.

14 Q. And is that the same concept of a free base
15 nicotine that the National Cancer Institute was
16 talking about in the 1976 meeting?

17 A. That's correct.

18 Q. Okay. But here it said below 6.5 it's
19 essentially unprotonated -- or essentially
20 protonated, which is bound; correct?

21 A. That's correct. That's what the Surgeon General
22 said.

23 Q. Now could you please turn to tab 95, which is
24 Exhibit GK100344. And is that an article from
25 Tobacco Science in 1972?

10026

- 1 A. Yes, it is.
2 Q. And an article by Morie entitled "FRACTION OF
3 PROTONATED AND UNPROTONATED NICOTINE IN TOBACCO SMOKE
4 AT VARIOUS pH VALUES?"
5 A. That's correct.
6 Q. And is that an article that you rely upon for
7 data and analysis regarding smoke chemistry?
8 A. Yes.
9 MR. WEBER: Your Honor, I'd move this
10 GK100344 under 803(18).
11 MR. CIRESI: Is this the --
12 Do you have the full document?
13 MR. WEBER: Yeah, that's just -- it's just
14 the one page.
15 MR. CIRESI: Okay. No objection, Your
16 Honor.
17 THE COURT: The court will receive
18 GK100344.
19 BY MR. WEBER:
20 Q. Now let me start out on this on the lower
21 right-hand column at the end of the article.
22 Well first of all let me show -- that's the
23 title, and let's go to the lower right-hand. There
24 we are. And does the author talk about, first of
25 all, unprotonated nicotine in cigar smoke?

10027

- 1 A. Yes.
2 Q. And then does he go on to talk about the pH from
3 smoke of domestic blend cigarettes?
4 A. Yes.
5 Q. And what does he --
6 What does the author of this article in 1972
7 report the pH of domestic blend cigarettes to be?
8 A. In this report, Dr. Morie reports domestic blend
9 cigarettes pH ranges from 5.2 to 6.2, with an average
10 of -- I'm sorry, I can't -- it's 5.6 I suppose. It's
11 a bit blurry on there.
12 Q. Okay. And then what does Dr. Morie go on to say
13 in the next sentence?
14 A. Gerald goes on to say, "It is obvious from this
15 that the percentage of unprotonated nicotine in the
16 TPM of smoke from these cigarettes is very low (.22
17 to 2.17 percent)."
18 Q. And is that observation with respect to the
19 amount of unprotonated nicotine at this pH level
20 consistent with the observations of the '79 Surgeon
21 General's report?
22 A. Yes, it is.
23 Q. Now could you go to the first paragraph in the
24 introduction to the article. And let me read that
25 and ask you a question.

10028

- 1 "Nicotine in basic tobacco smoke (pH 8.0) is

2 absorbed much more readily through the mucous
3 membranes of the mouth than is nicotine in acidic
4 tobacco smoke (pH 5.6) because of the higher
5 concentration of unprotonated nicotine in basic
6 smoke," and then some citations. It says, "The
7 presence of this unprotonated nicotine (sometimes
8 referred to as unbound nicotine) affects the
9 organoleptic properties of the smoke, particularly
10 those related to taste." Then it goes on to explain
11 the nature of the experiment.

12 Is that reference to the organoleptic qualities
13 of unprotonated nicotine consistent with the
14 documents you spoke about yesterday and today as
15 well?

16 A. Yes, it is.

17 Q. Is that that carbon-dioxide-effect analogy --

18 A. The analogy.

19 Q. -- or carbonation analogy you made?

20 A. That's only an analogy, that's correct.

21 Q. Now could you turn to tab 97, which is TG000352.

22 A. Okay.

23 Q. And let me ask you whether that's an article on
24 the pH of tobacco smoke by Brunnemann and Hoffmann?

25 A. That's correct.

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1 Q. From 1973?

2 A. That is 1974, actually.

3 Q. That's right. I'm sorry. I'm looking at the
4 received date. From --

5 Published in 1974. And is that a document on
6 which you rely with respect to matters of smoke
7 chemistry and analysis?

8 A. Yes.

9 MR. WEBER: Your Honor, I'd move the
10 admission of TG000352 under 803(18).

11 MR. CIRESI: No objection, Your Honor.

12 THE COURT: Court will receive TG000352.

13 BY MR. WEBER:

14 Q. I want to start out with you on page 122, if I
15 could, the top paragraph. And one of the co-authors
16 of this is Dr. Dietrich Hoffmann; correct?

17 A. That's right. This is Dietrich Hoffmann and
18 Klaus Brunnemann, who also works at the American
19 Health Foundation.

20 Q. And the date of this article is 1974?

21 A. 1974.

22 Q. Now if we could look at that second sentence up
23 at the top of the page. Sorry it's not focused
24 better.

25 A. On page 122.

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1 Q. Yes.

2 A. Where it starts "Cigarettes....," do you see
3 that? Let me read that.

4 "Cigarettes made from Bright tobacco or blended
5 tobacco deliver mainstream smoke below a pH of 6.2
6 and consequently contain only small amounts of

7 unprotonated nicotine." Do you see that?
8 A. Yes.
9 Q. And so in 1974 Dr. Hoffmann said below 6.2;
10 correct?
11 A. That's correct.
12 Q. Then he goes on to say, "The most commonly
13 smoked tobacco blends in France generate smoke with
14 pH values above 6.6;" correct?
15 A. That's correct.
16 Q. And says, "This can be explained by the low
17 content of reducing sugars in the black tobacco
18 blend." Correct?
19 A. That's right.
20 Q. Now if we could turn to page -- I think I want
21 to go back to the first page of the article. In the
22 very first paragraph, sentence that begins
23 "However...."
24 A. Okay.
25 Q. "However" --

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1 Let me read this, and I want to ask you a
2 question. "However, the pharmacological effect of
3 nicotine is not only a function of the nicotine
4 concentration, but also the pH of the total smoke,"
5 and it cites articles in '70 and '72. Do you see
6 that?
7 A. Yes.
8 Q. Now what does this tell you as to whether or not
9 the scientific community had information in 1970, '72
10 and '74, as to whether smoke -- pH of the total smoke
11 might have -- account for part of the pharmacological
12 effect of smoking?
13 A. I think that information was clearly in the
14 scientific literature.
15 Q. Now would you turn to tab 96, that's CE000282,
16 and can you identify that as an article in 1997
17 entitled "THE CHANGING CIGARETTE, 1950 to 1995,"
18 again by Dr. Hoffmann?
19 A. That's correct.
20 Q. Along with a co-author; correct?
21 A. That co-author is his wife, that's correct.
22 Q. Is this an article that contains data on smoke
23 chemistry that people in your field reasonably can
24 rely upon?
25 A. Yes.

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1 MR. WEBER: Your Honor, I'd move the
2 admission under 803(18) of CE000282.
3 MR. CIRESI: No objection, Your Honor.
4 THE COURT: Court will receive CE000282.
5 BY MR. WEBER:
6 Q. And if you could turn to page 330, doctor. And
7 I'm going to put 1995 on this chart where I've been
8 listing some of these results because, while the
9 article is published in '97, the title says that it
10 was examining cigarettes through '95; correct?
11 A. Ah, yes.

12 Q. Now if you could go to page 330, and the second
13 sentence --

14 Well actually if you start with that last
15 paragraph and read this -- if you could move that
16 down just a little bit, Ms. Kessler. There we go.

17 A. Start with the last paragraph?

18 Q. Yeah. "The kind of tobacco used as the filler
19 for cigarettes has a decisive influence in the
20 physicochemical nature of the smoke. The pH of the
21 smoke of cigarettes made only with flue-cured
22 tobaccos or with American blends ranges between 5.7
23 and 6.2 -- that is, it is slightly acidic -- whereas
24 the smoke pH of cigarettes made with air-cured
25 tobaccos lies in the range of 6.5 to 7.8." Okay? Is

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1 that what that says?

2 A. Yes.

3 Q. Now --

4 So again, Dr. Hoffmann says 5.7 to 6.2; is that
5 correct?

6 A. That's correct.

7 Q. Now taking into account, Dr. -- well wait just a
8 minute. Could you turn to tab 81 -- well strike that.

9 Let's go to --

10 Let's go to tab 98 for this one. This is a
11 document that's already in evidence as a report by
12 the state of Massachusetts, it's GK100345. And is
13 this a project report prepared for the Massachusetts
14 Department of Public Health?

15 A. Yes, it is.

16 Q. By an independent laboratory?

17 A. It's prepared by an independent laboratory
18 called Labstat.

19 Q. All right. And does it --

20 On page 12 in that report, does this report on
21 the pH of a number of commercial cigarettes that were
22 purchased and tested for the Massachusetts Department
23 of Health?

24 A. It does.

25 Q. And are those pH's listed in that second column

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1 from the left?

2 A. That's correct.

3 Q. Now were any of the pH listings in that second
4 column on the left of cigarettes that are reported on
5 in this report for the Massachusetts Department of
6 Health --

7 These were cigarettes, just for the record, that
8 were purchased in the open market in January 1997.

9 Do you see that on the screen, doctor?

10 A. Yes, I do.

11 Q. Now with respect to the testing of the
12 commercial cigarettes by Labstat in 1997, are the pH
13 of any of those cigarettes over 6.5?

14 A. No, sir.

15 Q. What's the highest pH on that list?

16 A. The highest number that's on this list is 6.35.

17 Q. Now --
18 And Marlboro on that list, what's the pH of
19 Marlboro on that list?
20 A. Marlboro, 6.028.
21 Q. So let me mark here 1997 testing for
22 Massachusetts, and they were under 6.5, just to
23 reference the 1979 Surgeon General's report; is that
24 correct?
25 A. That's correct.

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1 Q. Now let me go back for a moment to tab 81, which
2 is PX12340. And can you identify that as a 1975
3 memorandum by Woods and Sheets at R. J. Reynolds?
4 A. This is an RJR internal memorandum of the
5 research and development department from John Woods,
6 written by John Woods and Sue Sheets.
7 Q. Dated January 15, 1975?
8 A. That's right.
9 Q. And is this a document that was created and
10 maintained in the regular course of business at
11 Reynolds?
12 A. Yes.

13 MR. WEBER: Your Honor, I'd move the
14 admission of PX -- what's marked as P -- PX12340 as a
15 business record.

16 MR. CIRESI: No objection, Your Honor.

17 THE COURT: Court will receive Exhibit
18 12340.

19 BY MR. WEBER:

20 Q. Now I'd like you to turn to page five, if you
21 would, and does page five list a number of brands
22 with calculations of pH and calculations of free
23 nicotine?
24 A. Yes. On page five there's a listing of a number
25 of commercial brands along with market share and

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1 smoke pH and a number called free nicotine, which is
2 calculated from the pH measurement.
3 Q. That's just a calculation that flows from the pH
4 number pursuant to a formula?
5 A. Yes, it's a calculated number.
6 Q. Now these report on measurements taken for the
7 year 1974; correct? If you look right above the --
8 A. That's what it says, yes.
9 Q. Okay. Was the Camel --
10 And these are for filter cigarettes; correct?
11 If you look in the paragraph right above the table.
12 A. They are the 20 best-selling filter brands.
13 Q. Okay. Now was Camel Filter in 1974, did it have
14 ammoniated reconstituted tobacco sheet as part of its
15 blend?
16 A. Yes, it did.
17 Q. And what is the pH in 1974 for Camel with
18 ammoniated reconstituted tobacco sheet as part of the
19 blend?
20 A. At the bottom of the table is an entry for
21 Camel, smoke pH maximum, 6.19.

22 Q. All right. Now let's go to Winston at the top.
23 In 1974 was Winston -- did Winston have ammoniated
24 reconstituted tobacco sheet in part of its blend?
25 A. In 1974, ammoniated reconstituted tobacco was
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1 not used in Winston, so there was not ammoniated
2 tobacco in Winston.
3 Q. And what is the pH reported for Winston?
4 A. At the very top of the column for Winston, 6.16.
5 Q. Now what's the comparison of pH between 6.16 and
6 6.19, what's the significance of that to you as a
7 cigarette designer?
8 A. As a cigarette designer, I think those are the
9 same number essentially. There's no difference in pH
10 between the non-ammoniated Winston and the ammoniated
11 Camel, no difference in pH.
12 THE COURT: Counsel, I think we'll take a
13 short recess.
14 THE CLERK: Court stands in recess.
15 (Recess taken.)
16 THE CLERK: All rise. Court is again in
17 session.
18 (Jury enters the courtroom.)
19 THE CLERK: Please be seated.
20 THE COURT: Counsel.
21 MR. WEBER: Thank you, Your Honor.

22 BY MR. WEBER:
23 Q. Dr. Townsend, were there scientists at RJR over
24 the years who theorized that it was the ammonia in
25 Marlboro that was the key to Marlboro's success and
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1 that it was ammonia that increased pH, increased free
2 nicotine?
3 A. There were certainly a number of scientists at
4 R. J. Reynolds that theorized that increased pH might
5 improve performance in the market, just as there were
6 scientists outside Reynolds, outside the industry,
7 that had theorized the same thing. Yeah, certainly
8 there -- there were. There were several.
9 Q. Well if ammonia is a base, and if it's added to
10 the reconstituted sheet, why shouldn't it raise the
11 pH of smoke?
12 A. If one adds a base -- let me step back.
13 If you remember, pH is a measure of acidity,
14 with zero being -- or one being extremely acidic and
15 14 being extremely basic, and seven is about in -- in
16 the middle or is neutral. If you take a system like
17 reconstituted tobacco, for example, and you add a
18 base and you add enough of it, you would
19 theoretically, certainly, expect the pH to go up.
20 What we know is that the levels of addition of
21 ammonia in reconstituted tobacco, the smoke pH
22 doesn't go up. You can measure some small increases
23 in pH in the tobacco, the reconstituted tobacco pH,
24 but again, when it's blended together in a cigarette,
25 the smoke pH hasn't gone up.

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- 1 Q. Let me go back to tab 81 for a moment, that's
2 Exhibit 12340, and go to page five. There's one
3 issue I want to follow up on.
4 A. I'm sorry, you said page five?
5 Q. Page five.
6 Do you have that?
7 A. Yes.
8 Q. And that was that memorandum that dealt with
9 some pH measurements --
10 A. Yes.
11 Q. -- of various brands.
12 A. Right.
13 Q. Now --
14 And I want to write down the Camel pH number in
15 19 -- Camel Filter in 1974, and that was a -- that's
16 a number for a Camel Filter that has ammoniated sheet
17 as part of its blend; correct?
18 A. That's correct. Camel in 1974 used ammoniated
19 reconstituted tobacco.
20 Q. And what's that pH number?
21 A. It's reported 6.19.
22 Q. All right. Now could you turn to tab 98 at page
23 12, and that's the testing in 1997.
24 A. I'm sorry, you said tab 98?
25 Q. Yes. I think that's --

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10040

- 1 A. Okay.
2 MR. CIRESI: Exhibit number, please?
3 MR. WEBER: I'm sorry, it's GK100345.
4 BY MR. WEBER:
5 Q. And is that the test results for the state of
6 Massachusetts from the cigarettes that were tested in
7 1997?
8 A. That's correct. This is the Labstat report to
9 the state of Massachusetts, Commonwealth of
10 Massachusetts.
11 Q. Now --
12 And what is the pH in the state of Massachusetts
13 testing for Camel Filters in 1997?
14 A. In 1997, Labstat reported Camel Filters 5.998.
15 Q. Now does the measurement of Camel Filter pH in
16 1974 at 6.19 as compared to the state of
17 Massachusetts measurement in 1997 at 5.998, does that
18 show a substantial increase in pH over that 23-year
19 period?
20 MR. CIRESI: Excuse me, no foundation for
21 that, Your Honor. It just shows two points in time
22 for one cigarette that was tested.
23 THE COURT: Okay. You can --
24 MR. CIRESI: It's overbroad.
25 THE COURT: You can answer that.

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- 1 A. The difference between the two numbers, these
2 two numbers for Camel Filter between 1974 and 1997, I

3 would regard as not substantially different, and the
4 reason is because the pH measurement itself has
5 considerable variability in it. We know that from
6 the testing we've done in the analytical department
7 at Reynolds, that if one takes one sample of
8 cigarettes and does repeated measures, we see
9 considerable variability in the actual number that we
10 get. And it's -- I can't give you an exact date --
11 number as we sit here on the variability or the
12 variance of that number, but I can generally tell you
13 it's in the order of plus or minus two to three
14 tenths of a pH unit on repeated measures of the same
15 cigarette.

16 Part of that is because cigarettes are -- are
17 variable, and we know that the blend composition can
18 affect pH to a small degree, so small changes in
19 the -- in the blend itself will affect pH to a small
20 degree within that variability, and also we know that
21 different tobaccos and different nicotine content of
22 those tobaccos and different acid contents of those
23 tobaccos also adds to the variability.

24 So the method is variable and the cigarettes are
25 variable, which then leads us to a pretty -- pretty

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1 large variability on repeated measurement of the same
2 sample.

3 MR. WEBER: Your Honor, we're at a point
4 now where I think that issue that counsel has
5 discussed with you needs to be addressed.

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1 (Side-bar discussion as follows:)
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2 (Side-bar discussion concluded.)
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VOIR DIRE EXAMINATION - DAVID E. TOWNSEND

10060

1 BY MR. WEBER:
2 Q. Dr. Townsend, would you turn to tab 65, X3027A.
3 Is Exhibit 3027A an exhibit you prepared from the
4 records of the R. J. Reynolds Tobacco Company
5 regarding the smoke pH of Winston from a period of
6 1972 through 1978?
7 A. That's correct.
8 Q. And is it based on test data created and
9 maintained in the regular course of business?
10 A. That's correct also.
11 Q. And is it data of the type that experts in your
12 field would reasonably rely upon?
13 A. Yes.
14 MR. WEBER: Your Honor, I'd move the
15 admission for demonstrative purposes of X3027A.
16 MR. CIRESI: May I personally voir dire on
17 foundation?
18 THE COURT: All right, counsel.]

19 VOIR DIRE EXAMINATION
20 BY MR. CIRESI:
21 Q. Good morning, sir.
22 A. Good morning.
23 Q. You and I haven't met. My name is Mike Ciresi,
24 I'm one of the lawyers for the state.
25 You said you personally prepared this?
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1 A. No. I had personally -- I personally had it
2 prepared. My staff put this together from data that
3 exists in the research and development library.
4 Q. Okay. Did your staff personally prepare this
5 exhibit?
6 A. My staff personally gathered the data,
7 understood the data, examined all the data in the
8 records of R. J. Reynolds Tobacco R&D that relate to
9 this specific topic, accumulated the data, prepared a
10 graph, and gave it to me for my review, which I
11 reviewed.
12 This particular piece of paper my staff, of
13 course, did not prepare. The data, the information
14 and the graph my staff did, and I reviewed it.
15 Q. When did they prepare that?
16 A. This particular --
17 Q. The graph you talked about, sir. The graph that
18 was prepared --
19 MR. WEBER: Your Honor, Your Honor --
20 Q. -- that you reviewed --
21 MR. WEBER: Your Honor, he's interrupting
22 the witness.
23 Q. Excuse me. But you picked that up and I'm not
24 talking about that. The graph that you reviewed,
25 when was that prepared by your staff?
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1 A. The graph that summarized the data that's
2 included here was prepared in 1996 by one of my staff
3 members and their associates.
4 Q. When in 1996?
5 A. Which month?
6 Q. Yes.
7 A. I don't recall exactly.
8 Q. And you reviewed it in 1996?
9 A. Yes, I did.
10 Q. And did you then provide it to your counsel in
11 1996?
12 A. My staff member was in fact evaluating a host of
13 pH data from the records and prepared this, among
14 other charts. It went into a formal research and
15 development report in our department library, which
16 of course I reviewed and others reviewed. It existed
17 in our R&D library from the period it was created in
18 '96 until -- well it's still there today.
19 Q. That's not my question.
20 A. I can't -- I can't tell you an exact --
21 MR. WEBER: Your Honor, he's interrupting
22 the witness again.
23 A. I can't tell you an exact date that lawyers

24 first reviewed the un -- these graphs and that formal
25 research development report.

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VOIR DIRE EXAMINATION - DAVID E. TOWNSEND

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1 Q. Didn't you send it to the lawyers in 1996?

2 A. I can't recall specifically. I seriously can't.

3 Q. You did then send it to the lawyers in 1996
4 because they requested you to prepare it; isn't that
5 right, sir?

6 MR. WEBER: Objection, Your Honor, --

7 A. Absolutely not.

8 MR. WEBER: -- it's argumentative.

9 A. The lawyers in my company or outside my company
10 under contract did not request this. I requested my
11 staff to develop this because pH has been such an
12 issue. And we're sitting here, R. J. Reynolds and
13 the scientists at R. J. Reynolds, trying to
14 understand what the flap is about. We go back and
15 examine the data to try to get an understanding of
16 ourselves.

17 It is absolutely untrue that lawyers requested
18 this to be prepared. I asked my staff to do it --

19 Q. And you don't know?

20 A. -- and lawyers did not ask me to do that.

21 Q. And you don't know if you sent it to the lawyers
22 in 1996. That's your testimony?

23 A. I don't recall whether I did or not. I really
24 don't.

25 Q. Who did you give it to in the department in

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1 1996, what individual?

2 A. Research and development reports are circulated
3 to a number of people. I don't recall the
4 distribution on it. It certainly, in -- in -- in
5 circulating around, went to all the research and
6 development executive management, because all of
7 executive management always get cover pages of the
8 formal reports. It then goes -- it then was
9 circulated to staff who were interested in the area.

10 Q. Did you look at the underlying data, you
11 yourself?

12 A. I have looked at the underlying data.

13 Q. Did you compare it to the graph, all the of the
14 underlying data?

15 A. I have compared some of the underlying data.

16 There are thousands of data points that were
17 incorporated in that 1996 review. I haven't compared
18 each and every specific point. I trust my people.

19 Q. Sir, did you --

20 How much did you look at? Of the full database,
21 what did you look at?

22 A. I've gone in and looked at selected data for
23 selected brands over certain time periods to, number
24 one, understand what the data are, to ensure myself
25 and guarantee myself that this is an accurate

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1 representation of the large volume of pH data, I've
2 looked at the overall conclusions that my staff
3 member drew in accumulating all of this to make sure
4 that those conclusions were consistent with the data.
5 Q. Where are your notes from that?
6 A. I don't recall that I have any notes.
7 Q. You had no notes of what you looked at in
8 comparing it; is that what you're saying?
9 A. Look, let me tell you what I did.
10 Q. I --
11 Just tell me if you have notes. That's all I
12 asked.
13 A. I've already -- I've already answered that
14 question.
15 Q. You --
16 A. I said I don't know that I had any notes. I
17 don't usually when I'm reviewing a report, unless I
18 have specific questions that jump out at me, I
19 generally don't make notes. I'll go through and I'll
20 read and understand what my staff do.
21 Q. So you don't know one way or the other whether
22 you have notes; is that right?
23 A. Well let me be a little more explicit. I'm --
24 To the best of my recollection, I don't think I
25 have any notes taken -- that I wrote when I reviewed

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1 this or even subsequent to that. I have not --
2 Q. Did they bring you --
3 A. I --
4 Q. Excuse me. Did they bring you all of the data
5 so that you could select out some to test it?
6 A. All of the data resided in our research and
7 development department. I have gone back to that
8 entire data set and I personally have gone through
9 and looked at some of it. I haven't -- I can't
10 possibly look at the thousands of data points.
11 Q. Did you go back and select out from the entire
12 database on your own which ones you decided to look
13 at? Did you?
14 A. I went back and have made my own selection of
15 some data and looked at it. Is that what your
16 question is?
17 Q. That's what my question is very simply. Did you
18 yourself personally go and select data from this
19 large database?
20 A. I have personally selected data from the data
21 that resides in our research and development
22 department to compare versus what we see here.
23 Q. And sir, how was the data compiled in your
24 research department that you selected data from?
25 A. These data are from a program that spanned many

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1 years that we call the competitive brand database
2 where we're -- where we take commercial products off
3 the market that our competitors have out there, we
4 take our products off the market from retail, we

5 bring those products into the research and
6 development department, and we measure a number of
7 properties of those cigarettes, including tar and
8 nicotine, pressure drop, and for a time period we
9 measured pH. And I'm trying to answer your question,
10 please.

11 Q. Yeah, well --

12 A. And -- and we did measure pH. So for a time
13 period from '72 up until the time we finished that
14 competitive brand analysis or stopped it, which was
15 in 1998, we have quite a lot of pH data in that
16 competitive analysis report. That's what the time
17 period is, and that's where the data are from.

18 Q. Where -- where is the database? How is it kept?

19 A. The database --

20 The data are in black notebooks in the research
21 and development library. They've also been
22 incorporated in a computerized database, at least a
23 portion of it has, because it's a massive task.

24 Q. What did you use when you went back and selected
25 out, did you use the Black Books that you just

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1 referred to, or did you use the computer database?

2 A. Well they're the same. I personally used
3 printouts from the computerized database. The data
4 that's in both are the same.

5 Q. Did you use the Black Books?

6 A. I've just answered your question. I used the
7 computer printouts from the database.

8 Q. Are the computer data printouts in a Black Book?
9 "Yes" or "no."

10 A. There are some computer printouts in the Black
11 Book. There are some entries in the early years, I
12 believe, that are even handwritten. But most of it
13 are printouts, computer printouts.

14 Q. Did you use the Black Books, number one?

15 A. The Black Books is termed the collection of
16 data. I have used those data from the Black Books.

17 Q. And did you also use data from the database
18 which was -- which were not in the Black Books?

19 A. No. No. All of the data are in the Black --
20 the so-called Black Book collection.

21 Q. So that when you went back, you went to the,
22 quote, Black Book collection; correct?

23 A. Yes.

24 Q. And those Black Books were turned over to your
25 counsel; correct?

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1 A. Those Black Books and the data in the
2 competitive brand survey have been given to my
3 counsel.

4 Q. Okay. I'm asking about the Black Books now. Do
5 you understand that? You said -- you went like
6 quotes, "Black Books."

7 You understand what that is?

8 A. I understand what Black Books is, and what it is
9 is it's an indication of that collection of data.

10 Initially we started outputting it in black
11 three-ring binders, and that's where the term came
12 from.
13 Q. Fine. Now did you take those Black Books and
14 provide them to your lawyers?
15 A. Our lawyers have been provided the data and all
16 the data from that collection.
17 Q. And when were the Black Books provided to your
18 lawyers?
19 MR. WEBER: Your Honor, I object to this.
20 We're getting beyond the scope of what the voir dire
21 is about.
22 THE COURT: No. I want that answered.
23 A. I have no idea the first time lawyers inside
24 Reynolds or outside Reynolds have seen those Black
25 Books. We have -- we have lawyers coming through our
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1 research and development department all the time,
2 making sure they understand what the documents are
3 for production in litigation, and so I can't possibly
4 tell you the first time those books were looked at.
5 Q. Who in Reynolds, of your 450 scientists, would
6 be able to come into court and testify under oath
7 when the Black Books were provided to your lawyers?
8 Who?
9 A. The very first time?
10 Q. Yes.
11 A. I don't know. I don't know the answer to that.
12 Q. Have you ever asked that question?
13 A. No, I haven't.
14 Q. So nobody's gone back to ascertain when the
15 Black Books were provided to the lawyers; is that
16 correct?
17 A. I don't know the answer to that. I'm telling
18 you what I know, and what I know is I don't know when
19 the first time a lawyer was provided that
20 information.
21 Q. That wasn't my question this time, sir.
22 A. Okay. Well I'm sorry, I'm sorry, I
23 misunderstood you.
24 Q. My question was: You don't know if you've gone
25 back and asked when the Black Books were provided.
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1 MR. WEBER: Let me object, it's asked and
2 answered, Your Honor.
3 A. I don't recall --
4 THE COURT: You may answer.
5 THE WITNESS: I'm sorry?
6 THE COURT: You may answer.
7 A. I don't recall myself personally going back and
8 asking the very first date those data were ever
9 produced to an attorney. I don't recall personally
10 ever asking that question.
11 Q. Nobody's asked you to do that over the past two
12 weeks?
13 A. I don't recall that specifically.
14 Q. Well do you recall it generally?

15 A. There's been some general discussions about --
16 about the data. In particular, after my deposition
17 for this case, which was last fall sometime, the
18 request was made of me by the examiner for the state
19 of Minnesota to produce all the data. I went back
20 immediately after that deposition, asked my staff to
21 accumulate the data, I reviewed it, and then it went
22 off to the lawyers. That's the first recollection I
23 have of any discussion about this.

24 Q. Now you recall sending something to the lawyers?

25 A. We produced the underlying information for these
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1 graphs as a result of the deposition that I gave back
2 in the fall.

3 Q. That's --

4 I'm not asking about the underlying information.
5 And if you don't understand a question I ask you,
6 please tell me, sir. Is that agreeable?

7 A. Well I understood that you were asking about the
8 underlying data because you keep asking about the
9 Black Books. I'm not trying to be difficult, I'm
10 just trying to understand.

11 Q. I'm not trying to be difficult either. I'm
12 trying to understand when the Black Books -- that's
13 the term I've been using. Now do you understand
14 that, Black Books?

15 A. I think we coined the term. I understand it.

16 Q. Who coined the term?

17 A. Scientists at Reynolds, because we collected and
18 physically put the data in black three-ring binders.
19 It became known as the Black Book collection.

20 Q. And when did that become known as the Black Book
21 collection?

22 A. Oh, I don't know the very first time.

23 Q. You don't --

24 A. I've known it -- I've known it for years.

25 Q. For years. Long before your deposition was
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1 taken; is that correct?

2 A. I've known that -- that competitive brand
3 database information existed in Black Books.

4 Q. You've known about the existence of the Black
5 Books long before your deposition was taken; correct?

6 A. I think that's fair. I can't tell you exactly
7 when I first learned about the Black Books. I know
8 that there's competitive brand information in the
9 collection.

10 Q. But you said you have known about the Black Book
11 for years; correct? Did you say that, sir?

12 A. I said that I've known that the competitive
13 brands database, also known as the Black Books,
14 existed.

15 Q. You've known --

16 A. Yes.

17 Q. -- that the Black Books have existed for years;
18 correct?

19 A. I've known that the competitive brands database

20 known as the Black Books has existed for years.
21 Q. And --
22 A. I've known that for years, I'm sorry.
23 Q. So therefore you've known that years before your
24 deposition was taken; correct?
25 A. Clearly years before my deposition was taken
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1 I've known that competitive brands database, also
2 known as the Black Book, existed.
3 Q. And you knew that the Black Books existed at the
4 time your deposition was taken; correct?
5 A. At the time my deposition was taken I knew that
6 competitive brands data, such as we've been talking
7 about that are stored in the Black Book collection,
8 existed.
9 Q. Sir, is the answer to my question yes, you knew
10 the Black Books existed in your research library at
11 the time your deposition was taken?
12 A. I knew that the competitive brands database
13 existed. It's also known as the Black Books.
14 Q. Okay. So the answer to my question, then, is
15 yes; correct?
16 A. What is your question specifically? I'm sorry.
17 Q. Well I'll repeat it again.
18 At the time your deposition was taken, you knew
19 that the Black Books existed; correct?
20 A. At the time of my deposition, I think I didn't
21 call them Black Books, but I certainly knew that the
22 competitive brands database, which was a multi-year
23 effort, existed. There's no question about it.
24 Q. Well I understand there's no question about
25 that. I'm -- my question is very simple.

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1 MR. WEBER: I object to counsel's
2 commentary again, Your Honor.
3 THE COURT: Yeah, counsel, no commentary,
4 please. Just ask the question.
5 BY MR. CIRESI:
6 Q. At the time your deposition was taken, you knew
7 that the Black Books were in existence; didn't you?
8 A. Termed specifically as Black Books?
9 Q. Yes.
10 A. I'll have to guess and -- and say I -- I
11 probably did. I'm not entirely sure. I knew,
12 however, that the underlying data, the competitive
13 brands database, existed. Research and development
14 people know that because we've participated in this.
15 Q. Sir, you just testified you knew of the
16 existence of the Black Books for years; didn't you?
17 A. I think we're into a matter of semantics.
18 Q. No, we're not, sir.
19 MR. WEBER: Objection, Your Honor.
20 THE COURT: Yeah, counsel.
21 MR. CIRESI: Well Your Honor, I think I'm
22 entitled to an answer to the question.
23 THE COURT: You're not entitled to argue.
24 MR. CIRESI: Argue, I understand that, Your

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1 THE COURT: Please.

2 BY MR. CIRESI:

3 Q. Sir, you just testified that you knew for years
4 that the Black Books existed; correct?5 A. I think that it's not as simple as that, because
6 I think we are talking about semantics. I clearly
7 knew that the data from the competitive brands
8 database existed. To me that's the substance of it.
9 Now if you want to call it the Black Books and when I
10 began referring to it as the Black Books or when I
11 personally began referring to it as the Black Books,
12 that's to me very confusing and I don't understand
13 the point.

14 Q. Confusing?

15 A. Yes.

16 Q. When you got a memo in 1996, did it refer to the
17 Black Books?

18 A. It referred to Black Books, as I recall.

19 Q. So that in 1996 -- that was, what, a year before
20 your deposition, year and a half?

21 A. Approximately.

22 Q. So then you knew about the Black Book; correct?

23 A. I've heard the term Black Books. I'm very
24 familiar with the competitive brands database that's
25 in there.

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1 Q. Sir, I'm asking about the Black Books. That's
2 what we're focusing on here.

3 A. Okay.

4 Q. So you knew of the existence of the Black Books
5 at least in 1996; correct?

6 A. I think that's quite possible.

7 Q. And you said that --

8 A. I said --

9 Q. -- after your deposition you went back and
10 looked for the Black Books; didn't you?11 A. After my deposition I went back and asked my
12 staff to pull out all the underlying data that was
13 asked of me by the examiner, and we produced that.

14 Q. And you got the Black Books; is that right?

15 A. I beg your pardon?

16 Q. You received the Black Books; correct?

17 A. I have looked through the data and the so-called
18 Black Book collection. What do you mean I received
19 the data?20 Q. When you went back and asked for the data, did
21 you receive Black Books?22 A. When I went back and asked for my staff member
23 to provide all the underlying data, my staff member
24 went back to the Black Book collection, pulled out
25 and xeroxed copies of that and provided to my

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1 attorneys. That's all I know.
2 Q. Now your attorneys had the Black Books, though,
3 long before that; didn't they, sir?
4 A. I think I've already answered one of your
5 questions I don't know the very first time.
6 Attorneys in our company and attorneys under contract
7 go through all of our documents to make sure they
8 understand what they need to produce for litigation.
9 Q. And they have to have a sheet that informs the
10 company and you what type of documents that they have
11 obtained; don't they?
12 MR. WEBER: Let me object to this, Your
13 Honor. I think it's getting beyond voir dire and
14 getting into areas that are not appropriate for this
15 inquiry.
16 THE COURT: Yeah, I think we're starting to
17 get a little further than we need.
18 MR. CIRESI: I'm only trying to lay
19 foundation for whether they received the Black Books
20 at that time, Your Honor.
21 THE COURT: All right. Go ahead.
22 BY MR. CIRESI:
23 Q. Sir, there is a procedure set up whereby the
24 company and the lawyers know what they obtain from
25 the company; correct?

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1 A. I don't know what procedures there are in place.
2 From the R&D department perspective, paralegals visit
3 our department, they take -- actually physically take
4 files and return them the next day or the second day
5 after they've been xeroxed and catalogued. I don't
6 know the procedure that they use.
7 Q. Who would know that procedure?
8 A. I would refer you to -- to our chief counsel.
9 Q. Your general counsel; is that right?
10 A. Yes.
11 Q. And that general counsel would know when your
12 lawyers first had the Black Books.
13 A. Well I certainly would think that he might be
14 able to find out, because I certainly don't know.
15 Q. And you haven't tried to find out in the last
16 two weeks.
17 A. No.

18 MR. CIRESI: We renew the objection.
19 THE COURT: Overruled.
20 MR. WEBER: Okay?
21 THE COURT: Proceed, counsel.
22 MR. WEBER: Thank you, Your Honor.
23 Your Honor, that objection was to this exhibit
24 and you overruled it. Has the court accepted the --
25 Before I display this, I just want to make sure

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1 the court has accepted the demonstrative -- X3027A
2 for demonstrative purposes.
3 THE COURT: What tab are you at?
4 MR. WEBER: Tab 65, Your Honor.
5 THE COURT: And what number do you have?

6 MR. WEBER: I have X3027A.
7 THE COURT: And that's what you're
8 introducing?
9 MR. WEBER: Yes, that's -- that's not the
10 tab in -- that's --
11 THE COURT: Okay, all right. The court
12 will receive X3027A for illustrative purposes.
13 BY MR. WEBER:
14 Q. Now with respect to X3027A, Dr. Townsend, does
15 that reflect pH measurements for the smoke of Winston
16 over the period of years set forth below?
17 A. Yes, it does.
18 Q. And does it have an average calculation there?
19 A. Calculated for the data in this graph, the
20 average pH is 6.06.
21 Q. Now does that mean that there were no single
22 data points above 6.06?
23 A. Of course not. As I've already said in answer
24 to an earlier question, there is some variability due
25 to the method and due to the variability of

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1 cigarettes.
2 Q. And if we look at around 1980 where there's a
3 data point that would be above 6.1, do you see that?
4 A. I see that.
5 Q. Does that mean that in 1980 there were no data
6 points above 6.1?
7 A. No, it doesn't. There -- there could
8 be because -- again, because the method is variable
9 and cigarettes are variable, this average for 1980
10 can have numbers that are on either side of that
11 particular average.
12 Q. Now with respect to the data points on here, do
13 they reflect an averaging of all of the measurements
14 of pH that were collected as part of the competitive
15 brand analysis?
16 A. This represents the average of all the data for
17 that year collected under the competitive brands
18 database.
19 Q. Now on this chart, is there any average that
20 exceeds 6.3?
21 A. No, there isn't.
22 Q. And is there any average that exceeds 6.2?
23 A. No, there isn't.
24 Q. Now could you turn to tab 66, and let -- that's
25 X3021, and let me ask you whether that's a similar

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1 chart prepared under similar circumstances for
2 Winston Lights?
3 A. That's correct, it is.
4 MR. WEBER: Your Honor, I'd move the
5 admission of X3021 for demonstrative purposes.
6 MR. CIRESI: Same objection.
7 THE COURT: The court will receive X3021
8 for illustrative purposes:
9 BY MR. WEBER:
10 Q. All right, now, is this a similar chart graphing

11 pH over this period of time of the smoke for Winston
12 Lights?
13 A. Yes, it is.
14 Q. And do I notice the graphing here as slightly
15 different from the graphing on the prior chart; in
16 other words, the top line here is 6.3?
17 A. The scales are different. The maximum -- or
18 the -- the top of the chart is three -- 6.3, whereas
19 the chart we saw just a minute ago, the top line was
20 6.4.
21 Q. And --
22 A. So this is a somewhat expanded scale compared to
23 the first one.
24 Q. And again, there's some variability here within
25 two or three tenths of a point. What does that

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1 reflect to you, Dr. Townsend?
2 A. Well that's correct, there is variability, and
3 there's variability in the pH data. Again, as I said
4 a few minutes ago, on replicate measures of the same
5 sample of cigarettes we see variability that's in
6 the -- in the neighborhood of .2 to .3, plus or
7 minus, from the average.
8 Q. Are there other factors that can affect the
9 variability in smoke pH?
10 A. Well there are a number of factors that can
11 affect variability in smoke pH. Certainly the method
12 itself is somewhat variable. The tobacco itself of
13 course is an agricultural product and the properties
14 of it, including the nicotine content, other bases,
15 other acids, affects pH. Also the blending operation
16 is not a hundred percent uniform, there's small
17 differences in the burley to flue-cured ratio, and
18 because burley has a high nicotine, if -- if that
19 particular cigarette has a slightly higher burley
20 level than the average, then it's probably going to
21 have a slightly higher pH. So there are a number of
22 factors that affect it.
23 Q. Can I take you back to X3027A, that chart with
24 Winstons for a minute. I want to ask you one
25 question --

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1 A. Yes.
2 Q. -- if we can pull it up.
3 When did the Winston brand first have ammoniated
4 reconstituted sheet included as part of its blend?
5 A. Winston Filter was first -- the first used
6 ammoniated reconstituted tobacco in 1979.
7 Q. Do you see any material and sustained increase
8 in smoke pH in the series of years after 1979?
9 A. No.
10 Q. By the way, why do these charts stop in 1988?
11 A. That's when we stopped collecting data under the
12 competitive brand database program.
13 Q. Stopped collecting pH data?
14 A. Well we stopped collecting all data under that
15 program. That program stopped.

16 Q. Could you turn to X3023A, tab 67. And is that a
17 similar chart for Salem cigarettes?
18 A. Yes, it is.
19 Q. Prepared in the same manner?
20 A. Yes.

21 MR. WEBER: Your Honor, I'd move X3023A for
22 demonstrative purposes.

23 MR. CIRESI: Same position, Your Honor.

24 THE COURT: That will be received for
25 illustrative purposes.

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1 BY MR. WEBER:

2 Q. And again here we've got a scale that has 6.4 as
3 the top line, doctor?

4 A. That's correct.

5 Q. Was Salem ammoniated during this period, if you
6 recollect?

7 A. As I recall, it was ammoniated for maybe two
8 years or thereabouts generally. We -- we didn't
9 ammoniate Salem or use ammoniated reconstituted in
10 the Salem but for maybe two years, right around -- it
11 was in the early '80s, if I recall right.

12 Q. Do you see any sustained or continuous increase
13 in pH over the period of this time for Salem pH?

14 A. No, I don't see a sustained increase in pH over
15 this time.

16 Q. And if you'd turn to tab 69, X3001.

17 A. Okay.

18 Q. Is this a chart prepared in a similar fashion
19 with respect to the Camel Filter brand?

20 A. Yes.

21 MR. WEBER: I'd move X3001 for
22 demonstrative purposes, Your Honor.

23 MR. CIRESI: Same position, Your Honor.

24 THE COURT: Court will receive X3001 for
25 illustrative purposes.

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1 BY MR. WEBER:

2 Q. 3001, do you have it? Okay. Thank you.

3 Now again, the top line here is 6.4?

4 A. That's correct.

5 Q. And we have one data point above that in about
6 1979 or so?

7 A. That is correct.

8 Q. And then within a period of a few years there's
9 a -- oh, roughly six-tenths of a percent drop in pH?

10 A. That's correct.

11 Q. Or a .6 drop.

12 A. At least between -- between the numbers there's
13 that difference.

14 Q. Point six. And the average over this period of
15 time is?

16 A. 6.08.

17 Q. And if you'd turn to tab 70, X3017, is this a
18 similar chart for Camel Light?

19 A. Yes.

20 Q. Prepared in similar circumstances?

21 A. Yes.
22 MR. WEBER: Your Honor, I'd move X3017 for
23 demonstrative purposes.
24 MR. CIRESI: Same position, Your Honor.
25 THE COURT: Court will receive X3017.
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1 BY MR. WEBER:
2 Q. And here on Camel Lights that top line is 6.6.
3 it's a different scale; correct?
4 A. Yes, it is.
5 Q. So the first measurement here was slightly above
6 6.6?
7 A. That's correct.
8 Q. Was that --
9 Did that measurement maintain over time, or did
10 it decrease?
11 A. Well it decreased. Camel Lights was introduced
12 into the market in 1978. It decreased --
13 The yearly averages decreased several tenths of
14 a point very dramatically.
15 Q. And I have one more of these I want to ask you
16 about, Dr. Townsend. I think it's tab 68, X3013.
17 A. Okay.
18 Q. And is that a similar chart for the Salem Light
19 brand?
20 A. Yes.
21 MR. WEBER: Your Honor, I'd move for
22 demonstrative purposes X3013.
23 MR. CIRESI: Same position, Your Honor.
24 THE COURT: Court will receive X3013 for
25 illustrative purposes.

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1 BY MR. WEBER:
2 Q. And again the same type of chart, Dr. Townsend?
3 A. That's correct.
4 Q. Some variability again?
5 A. Certainly.
6 Q. And average, roughly, in the same magnitude as
7 the others?
8 A. That's correct, 6.09.
9 Q. Now let me move to a different document here.
10 Could you turn to tab 43, which is GK000555.
11 A. Okay.
12 Q. And is that GK000555, is that the "Report of
13 Canada's Expert Committee on Cigarette
14 Modifications?"
15 A. Yes, that's what it is.
16 Q. And was this report prepared pursuant to
17 Canadian law as a report to the Canadian government?
18 A. That's correct.
19 Q. Does it contain information and data of the type
20 on which you rely as someone who works in the area of
21 cigarette design?
22 A. Yes, it does.
23 MR. WEBER: Your Honor, I'd move the
24 admission under 803(8) as a government report, and
25 under 803(18).

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1 MR. CIRESI: It's not a government report,
2 Your Honor, it's a conference proceeding. But I have
3 no objection to the -- to the document.

4 THE COURT: All right, the court will
5 receive GK000555. It is not a government report
6 though.

7 BY MR. WEBER:

8 Q. Could you turn to the page one -- actually it's
9 the third page, and does that list the people who are
10 participants on the Canada's Expert Committee on
11 Cigarette Modification?

12 Page labeled three in the upper right-hand
13 corner, doctor. It's at the end of the table of
14 contents.

15 A. Yes.

16 Q. And can you identify who these people were.

17 A. Yes. Neal Benowitz is a member of the faculty
18 of the University of California at San Francisco.
19 He's published a lot in the area of nicotine and
20 nicotine pharmacology and physiology.

21 Q. Is Dr. Benowitz a firm believer in the fact that
22 nicotine is addictive?

23 A. That would be my representation of his position.

24 Q. He's written in that area?

25 A. Certainly, quite -- quite a lot.

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1 Q. Okay. The next participant.

2 A. John deBethizy is a scientist at R. J. Reynolds
3 Tobacco Company, works in the research and
4 development department. He's also an expert in
5 nicotine pharmacology and pharmacokinetics.

6 Q. Patrick Dunn.

7 A. Patrick Dunn is head of research and development
8 for Imperial Tobacco Company in Canada. He's quite
9 experienced in the area of tobacco science, cigarette
10 design, and other areas.

11 Q. Jack Henningfield?

12 A. Jack Henningfield is a Ph.D., I don't actually
13 know what his background is, but he was the director
14 of -- of a program at the National Institute of Drug
15 Abuse at the time this conference was conducted.

16 Q. Next one, is that Dr. Hoffmann we've referenced
17 several times?

18 A. That's right, that's Dietrich Hoffmann.

19 Q. From the American Health Foundation?

20 A. Correct.

21 Q. Lynn Kozlowski.

22 A. Lynn Kozlowski is a scientist from Pennsylvania
23 State University. He's, among other things, devoted
24 a fair amount of attention to compensation, so
25 he's -- he's knowledgeable in the area of cigarettes.

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1 Q. Dianna Petitti.

2 A. Dianna Petitti is an epidemiologist. I think
3 she's with Kaiser Permanente, if I'm not mistaken.
4 Epidemiologist. Has done work in the area of
5 cigarette smoking risks.
6 Q. Bill Rickert?
7 A. Bill is head of Labstat. He's -- he's a
8 chemist. And Labstat is -- is a contract research
9 lab in Canada. Dr. Rickert has worked a lot with the
10 Canadian government and the U.S. government and the
11 state of -- state of Massachusetts providing
12 analytical data such as tar, nicotine, specific
13 constituents in smoke, as well as pH measurements,
14 for government bodies, and also provided
15 consultation. Dr. Rickert was also chairman of this
16 panel that was put together by the Canadian
17 government.
18 Q. Is Dr. Rickert and Labstat, is that the lab that
19 performed the measurements for the Massachusetts
20 Department of Health that we referred to earlier?
21 A. That's correct. Dr. Rickert and his lab had
22 extensive experience measuring cigarettes, they
23 understand cigarettes and tobacco chemistry and
24 cigarette performance.
25 Q. And Don Shopland.

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1 A. Don Shopland is director at the National Cancer
2 Institute. He spent his entire professional career
3 in the area of cigarette smoking and the risks of
4 smoking, so he's quite knowledgeable on the
5 epidemiology. I think his background actually is
6 epidemiology.
7 Q. And the last named one is yourself; correct?
8 A. That's correct.
9 Q. Now did the people on this committee, did they
10 agree on everything altogether?
11 A. No. This was -- this was a scientific
12 discussion and people certainly voiced various
13 opinions. In many cases there was not agreement on a
14 number of topics dealing with cigarette modification
15 and the risks of smoking and constituents in smoke.
16 There were some topics where there was general
17 agreement. So certainly not everything, but there
18 was some.
19 Q. What the diplomats would call a full, frank
20 discussion?
21 A. That's fair.
22 Q. Could you turn to page 54. And is there a
23 discussion reprinted there between Dr. Hoffmann, Dr.
24 Henningfield and Dr. Benowitz regarding smoke pH?
25 A. Yes.

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1 Q. And I'd like you to read Dr. Benowitz's comment
2 to the ladies and gentlemen of the jury, if you
3 would.
4 A. Okay. Dr. Benowitz said, "With respect to pH,
5 it's my impression that whatever gets into the lung
6 pretty much gets absorbed. The lung has a huge

7 surface area and it's highly buffered. A more
8 important factor when considering pH, is the
9 proportion of nicotine found in the vapor phase.
10 This would impact on the upper airway nicotinic
11 stimulation and determine how much nicotine could be
12 absorbed from the mouth. That is if you have a high
13 pH, you can absorb a lot in the mouth. Whereas when
14 smoking the usually blond" -- and "blond" means
15 flue-cured tobacco -- "cigarettes, the smoke of which
16 is of an acidic pH, you don't absorb anything from
17 the mouth. The higher the pH the more nicotine
18 impact there would be on the throat. One would
19 expect -- experience more irritation, more of a
20 nicotine type sensation. I don't think that
21 differences in pH would make much of a difference in
22 bioavailability, although it would impact on how
23 strong the cigarette tasted."

24 Q. Now has Dr. Benowitz been researching in the
25 area of nicotine and smoking for years?

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1 A. For many years. He's done considerable research
2 in the area of nicotine and smoking.

3 Q. I'd like to compare that comment of Dr. Benowitz
4 now with -- just quickly with Exhibit 1003 --
5 GK100344, which is already in evidence. And take you
6 back to the --

7 That's the article by Dr. Morie; correct?

8 A. Yes.

9 Can you tell me what the tab is, please?

10 Q. I'm sorry.

11 A. My bifocals don't work too well at this
12 distance.

13 Q. You'll have to bear with me a minute, I'm not
14 sure what tab that is.

15 Ninety-five, I believe. I'm sorry for that
16 delay.

17 A. Thank you. Okay.

18 Q. Now I'd like to go back to that first paragraph
19 of the Morie article. This was from 1972 entitled
20 "FRACTION OF PROTONATED AND UNPROTONATED NICOTINE IN
21 TOBACCO SMOKE AT VARIOUS pH VALUES."

22 A. That's right.

23 Q. Now Dr. Morie, I want to start with the -- if
24 you could read the first two sentences of that.

25 A. Under the "INTRODUCTION."

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10095

1 Q. Yes, sir.

2 A. "Nicotine in basic tobacco smoke (pH)" and then
3 it's blurred. I believe that looks like a five?

4 Q. That's 8.0.

5 A. 8.0.

6 "Nicotine in basic tobacco smoke (pH 8.0) is
7 absorbed much more readily through the mucous
8 membrane of the mouth than is nicotine in acidic
9 tobacco smoke (pH 5.6) because of the higher
10 concentration of unprotonated nicotine in basic smoke
11 (references 1 and 2). The presence of this

12 unprotonated nicotine (sometimes referred to as
13 'unbound nicotine') affects the organoleptic
14 properties of the smoke, particularly those related
15 to taste."

16 Q. Now Dr. Townsend, how does this observation
17 about absorption in the mouth and organoleptic effect
18 and effect on taste compare to what Dr. Benowitz said
19 at the expert -- as part of the expert report by
20 Canada's Expert Committee?

21 MR. CIRESI: Objection, calls for a
22 characterization, and this witness isn't qualified to
23 comment on these areas, Your Honor.

24 THE COURT: Sustained.

25 BY MR. WEBER:

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1 Q. Now are you aware that at one time at Reynolds
2 there were some people who theorized that smoke pH
3 related to market share?

4 A. I'm aware that several scientists had that
5 theory, yes.

6 Q. And perhaps people in the marketing department
7 as well?

8 A. Well I think the marketing department had
9 discussed that with members of the R&D department,
10 and probably held that theory as well also.

11 Q. Have you examined the issue of whether smoke pH
12 is correlated to market share or market performance
13 of a particular cigarette?

14 A. My staff and I have, yes.

15 Q. And do you have a conclusion as to whether smoke
16 pH is related to market performance?

17 A. Yes, I do.

18 Q. And what is that?

19 MR. CIRESI: No foundation.

20 THE COURT: Sustained.

21 Q. In investigating the issue of whether smoke pH
22 is related to market performance, did you utilize the
23 data, for example, for the brands you showed the
24 ladies and gentlemen of the jury about smoke pH?

25 A. I did use -- did use those data.

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1 Q. And what did --

2 In order to analyze the question whether smoke
3 pH is related to market performance, how did you go
4 about that, Dr. Townsend? How did you and your staff
5 go about that?

6 A. We used data from the competitive brands
7 database, the same database that we've been
8 discussing for the last few minutes, and also used
9 market-share data from the Maxwell report, which is
10 an outside report of market performance brand style
11 by brand style.

12 Q. And is that information that's regularly
13 accepted by people who are looking to the issue of
14 how cigarette brands perform?

15 A. Absolutely. We use it all the time.

16 Q. Is it public data?

17 A. It is public data.
18 Q. Is that the data you referred to, I guess,
19 Friday afternoon when you said that you kept track of
20 market performance of Reynolds brands?
21 A. That is the same data.
22 Q. Okay. Did you prepare some charts comparing
23 smoke pH as against market performance from the
24 Maxwell reports?
25 A. Yes.

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1 Q. Would you turn to tab 75, which I believe is
2 X3028.

3 THE COURT: Counsel, I think we should
4 better recess for lunch at this time.

5 THE CLERK: Court stands in recess to
6 reconvene at 2:00 o'clock.

7 (Recess taken.)
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1 (In-chambers conference as follows:)
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(In-chambers conference concluded.)

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1 THE CLERK: All rise. Court is again in
2 session.
3 (Jury enters the courtroom.)
4 THE CLERK: Please be seated.
5 THE COURT: Counsel.
6 MR. WEBER: Thank you, Your Honor.
7 Good afternoon, ladies and gentlemen.
8 (Collective "Good afternoon.")
9 BY MR. WEBER:
10 Q. Good afternoon, Dr. Townsend.
11 A. Good afternoon.
12 Q. Dr. Townsend, did there come a time when Philip
13 Morris marketed a cigarette that had -- that was
14 essentially denicotinized?
15 A. Philip Morris did market a cigarette -- actually
16 a number of brand styles that used what we called
17 denicotinized tobacco. What that is is it reduces
18 the level of nicotine to extremely low levels. It's
19 not completely eliminated, however. I'm not sure
20 that there's any way to completely eliminate
21 nicotine, but very low levels certainly.
22 Q. And how did that cigarette fare in the
23 marketplace?
24 A. Well that cigarette -- and I said there were
25 several, a number of brand styles, they were under

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1 the brand name of Next, and there were several brand
2 styles, there was a Merit denic as a brand and there
3 were a number of brand styles, and the denicotinized
4 tobacco was also used in Benson & Hedges styles that
5 were nicotine -- quote, nicotine-free. All of
6 those -- I think there were maybe 16 or 18 different
7 brand styles on the market at -- at different points
8 in time over about a two-year period or so, and all
9 of those products failed in the marketplace. They
10 were not consumer acceptable.
11 Q. Now as a cigarette designer, does that mean to
12 you that smokers smoke only for nicotine?
13 A. No, it -- it means --
14 MR. CIRESI: Excuse me. Objection, Your
15 Honor. There's no foundation to draw that conclusion
16 from that.
17 THE COURT: Okay. You can answer the
18 question.
19 A. No, as a cigarette designer, that certainly does
20 not mean that people smoke only for nicotine. I
21 think, based on a wealth of information, I've
22 concluded that nicotine is certainly important for

23 the smoking process, and a cigarette that has no
24 nicotine or almost no nicotine is not consumer
25 acceptable. But I think there are other factors,
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1 other reasons why people smoke as well, too. There
2 are certainly the taste characteristics as well as
3 the nicotine as well as the ritual. There are a
4 number of reasons.
5 Q. Now let me move to a different topic now, and I
6 want to ask you some questions about a product called
7 Premier. All right?
8 A. Yes, sir.
9 Q. Who is it who --
10 What company invented, developed and marketed
11 Premier?
12 A. R. J. Reynolds Tobacco Company.
13 Q. And when was that development and marketing
14 period?
15 A. The development of Premier, which was a quite
16 different cigarette design, began in the early '80s,
17 right around 1981 or thereabouts. Reynolds test
18 marketed Premier in three locations beginning in the
19 fall of 1988. So it was quite a long time period
20 that spanned almost all of the '80s.
21 Q. Did you have any involvement in the research and
22 development work on Premier?
23 A. I had support involvement. I wasn't responsible
24 for the overall project, but I did have support
25 involvement, particularly for some cigarette design

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1 aspects and basic research. My staff and I developed
2 computer models or mathematical models of how the
3 product worked and calculated mass flow and heat
4 transfer in that cigarette and were able to predict
5 changes in cigarette design and their effects on
6 performance. We also conducted extensive studies
7 with radiotracers to thoroughly characterize how that
8 product performed. We also evaluated a number of
9 materials characteristics in support of that project.
10 So my staff and I actually had a support role in
11 that. It was a peripheral role in that sense, not
12 functional responsibility.
13 Q. Did Premier follow a typical R&D path at
14 Reynolds?
15 A. No, it didn't. It was quite different from the
16 other projects at Reynolds that I've -- I've seen and
17 been associated with. Normally at Reynolds in a
18 product development effort, scientists in the
19 laboratory would design cigarettes, and then once
20 that design is in place and -- and well understood,
21 then we'd undergo manufacturing trials to see if we
22 could make it reproducibly, and then once that's
23 done, we would evaluate with consumers to see how
24 they accept or whether they reject it. So most of
25 the projects that I've seen at Reynolds in fact

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1 follow a very step-wise process, one step at a time.
2 Premier was quite different in that it was a -- a --
3 an extremely large budget at Reynolds, and we
4 undertook a number of the design pieces in parallel.
5 So while the cigarette design was proceeding, even
6 though we didn't have a final design, our
7 manufacturing and engineers -- our manufacturing
8 people and engineers were actually trying to design
9 equipment that might accomplish it, knowing generally
10 what the design might be, but not knowing all the
11 details. So there were a number of things moving in
12 parallel.

13 Q. (Clearing throat) excuse me.

14 Dr. Townsend, if you could turn to a separately
15 bound Exhibit, AZ001568.

16 A. Yes, sir.

17 Q. And can you identify that as a publication by R.
18 J. Reynolds Tobacco Company dated 1988 entitled "NEW
19 CIGARETTE PROTOTYPES THAT HEAT INSTEAD OF BURN
20 TOBACCO?"

21 A. That's correct. That's what it is.

22 Q. And is this a publication that R. J. Reynolds
23 made on its technical, chemical and biological work
24 regarding Premier?

25 A. That's absolutely correct.

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1 Q. And it was prepared and maintained in the
2 regular course of Reynolds' business?

3 A. That's correct.

4 Q. And it contains data, the type on which you as a
5 cigarette designer rely regarding cigarette
6 prototypes that heat but do not burn tobacco?

7 A. Yes.

8 MR. WEBER: Your Honor, I'd move the
9 admission of AZ001568.

10 MR. CIRESI: No objection, Your Honor.

11 THE COURT: Court will receive AZ001568.

12 BY MR. WEBER:

13 Q. Now I'm going to hold up -- is --

14 Is this an actual copy? You have a xerox up
15 there; correct?

16 A. That is the actual book itself. I have a copy,
17 that's correct.

18 Q. And this was published by Reynolds and made
19 public?

20 A. That's correct.

21 Q. Now I'd like to turn you to the beginning of the
22 book to page ix, and that's labeled "PEER REVIEW
23 COMMITTEE STATEMENT." Do you see that?

24 A. Yes.

25 Q. Did R. J. Reynolds assemble a peer review

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1 committee to review the research in this book prior
2 to its publication?

3 A. It did. R. J. Reynolds commissioned this peer

4 review committee to evaluate the chemistry and
5 biology that's in this book.
6 Q. And if I could turn now and display page xii, I
7 would like to go through the members of that peer
8 review committee just quickly, if we could. Dr.
9 Crapo from -- Crapo, excuse me, from Duke University?
10 A. That's correct.
11 This is page xiii, however. I think you just
12 said two i's.
13 Q. I'm sorry. And Dr. Doull --
14 A. That's correct.
15 Q. -- from the University of Kansas?
16 A. That's right.
17 Q. Dr. Estabrook from Southwestern Medical School
18 of the University of Texas?
19 A. Yes.
20 Q. Dr. Dietrich Hoffmann?
21 A. Yes.
22 Q. Dr. Adelbert Koestner from Michigan State?
23 A. Yes.
24 Q. Dr. Neal from the Chemical Industry Institute of
25 Technology?

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1 A. Right.
2 Q. Dr. Rosenkranz from Case Western Reserve
3 University?
4 A. Right.
5 Q. Dr. Slaga from the University of Texas again?
6 A. Yes.
7 Q. Dr. Squire from Johns Hopkins?
8 A. Yes.
9 Q. Dr. Tannenbaum from MIT?
10 A. Correct.
11 Q. Dr. Utell from the University of Rochester?
12 A. Yes.
13 Q. And Dr. Wogan from MIT.
14 A. That's correct.
15 Q. Were the --
16 Was this peer review panel asked to comment on
17 whether or not the Premier cigarette had met its
18 design objectives?
19 A. Yes, it was.
20 Q. Could we go back to page ix, please.
21 A. Yes.
22 Q. And starting down at the bottom --
23 And again, this is the beginning of the peer
24 review committee statement?
25 A. That's correct.

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1 Q. And down there at the bottom of the page, let me
2 read this and I want to ask you a question. It says,
3 "The stated objectives of the development, as set
4 forth in the monograph and emphasized in the oral
5 presentations, can be summarized as follows:
6 "To simplify the chemical composition of
7 mainstream and sidestream smoke emitted by the new
8 cigarette.

9 "To minimize the biological activity of the
10 mainstream and sidestream smoke emitted by the new
11 cigarette.

12 "To achieve significant reduction of
13 environmental tobacco smoke from the new cigarette."

14 Then it goes on to say, "The committee
15 considered these objectives to be commendable and
16 concluded that they have been substantially achieved
17 through the research and development program, as
18 represented by the information presented to the
19 committee for review."

20 Of what significance as a cigarette designer do
21 you draw from that with respect to the design
22 objectives of the Premier cigarette?

23 A. The significance I attach to it is it's a
24 remarkable set of objectives to be met
25 simultaneously. Major simplifications in the

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1 mainstream smoke, as we've already discussed, is
2 extremely difficult, and minimizing biological
3 activity, of course, is -- is a major challenge, and
4 achieving significant reductions in environmental
5 tobacco smoke is extremely difficult. All three of
6 those taken together, I think, are very difficult
7 objectives.

8 Q. Dr. Townsend, let me ask you --

9 Turn to page 45 in the monograph, if you would.

10 A. Okay.

11 Q. And is this a blowup, a copy of the figure on
12 that page?

13 A. Yes, it is.

14 MR. WEBER: Your Honor, could I have the
15 court's permission for Dr. Townsend to come down and
16 explain these charts?

17 Thank you.

18 MR. WEBER: Can the court --

19 THE COURT: Fine.

20 BY MR. WEBER:

21 Q. Dr. Townsend, this is a reprint of a figure from
22 the monograph, Fig. 2.2-1. Could you use that to
23 explain this cigarette that was known as Premier.

24 A. Yes. First of all, this Premier cigarette is
25 different than other cigarettes in that it heats

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1 tobacco, it doesn't burn tobacco. The construction
2 of it is quite different, as you see, from other
3 cigarettes. To generate heat, in fact, there is a
4 heat source in the front that's made of carbon --
5 carbon or carbonaceous char, then around that carbon
6 heat source is a glass insulator mat, then behind it
7 is an aluminum capsule that contains a substrate, and
8 the substrate is actually alumina beads, small beads
9 that have on the surface of the beads tobacco
10 materials, and those tobacco materials include
11 tobacco flavors and nicotine, of course.

12 Around the outside of this aluminum capsule is a
13 small layer of tobacco jacket that goes all the way

14 around the capsule, and then this front -- front
15 piece, then, is held together by special papers. Now
16 the back piece includes -- or the mouth-end piece
17 includes a tobacco roll, tobacco paper filter,
18 actually, that's made of something that's very
19 similar to the reconstituted tobacco we've already
20 talked about, and then behind that is a very
21 inefficient polypropylene filter. Then the two
22 pieces are joined together.

23 Now when the cigarette is lit, the only thing
24 that burns is this carbon heat source. Then as air
25 is drawn into the front of the cigarette during a

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1 puff, the air is heated, the hot air then goes back
2 to the -- inside the capsule where it heats these
3 little pellets, these little alumina spheres that
4 contain tobacco materials, contains a large -- a
5 large amount of glycerin also, which is glycerol,
6 which helps form the smoke, helps form the aerosol.

7 The particulate phase, a lot of gas-phase
8 compounds, primarily glycerin and water and tobacco
9 flavors and some nicotine, then, exit through slots
10 which are at the back end of this aluminum capsule.
11 They continue down into the paper filter. These
12 vapors condense, cool -- cool and then condense and
13 form droplets and so you form a smoke. In addition,
14 a small portion of air actually is drawn down the
15 periphery along -- through the jacket, through this
16 tobacco roll that's on the outside of the substrate.
17 The substrate container, this aluminum capsule, gets
18 warm, it heats this tobacco, and so the air that goes
19 down through here, again, carries all the flavors
20 from the warmed tobacco. But the tobacco doesn't
21 burn, the fuel -- the heat source burns. So that's a
22 general description of it.

23 In essence what we've done is we've taken --
24 essentially taken the pyrolysis step out of the
25 cigarette. We've now got the combustion step and no

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1 pyrolysis step.

2 MR. WEBER: Your Honor, I'd like to move
3 into evidence now several -- I'll put in two Premier
4 cigarettes, which were labeled physical -- P3.

5 MR. CIRESI: No objection.

6 MR. WEBER: And with the court's
7 permission, I'd like Dr. Townsend, if he could, to
8 just stand here and take one apart so the jury can
9 see the difference between what he just discussed and
10 a regular cigarette.

11 THE COURT: Okay. Is that what you call
12 destruction of evidence?

13 (Laughter.)

14 MR. WEBER: That's why I entered two.

15 THE COURT: And I assume that they're the
16 same thing?

17 MR. WEBER: Yes.

18 THE COURT: All right. Go ahead.

19 MR. WEBER: I just opened the pack.
20 THE COURT: Go ahead.
21 MR. WEBER: Okay. I'll give one of these
22 to the clerk. And if you could wait until I get
23 back, doctor, and then illustrate with the actual
24 cigarette that point you were just making.
25 THE WITNESS: Right.

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1 A. This is a Premier cigarette. You'll notice the
2 paper has turned a little bit yellow because they're
3 quite old; this came from the test market in 1988.
4 THE WITNESS: Is it possible -- I don't
5 want to step too close, Your Honor.
6 THE COURT: Well I don't want you any
7 closer than that.
8 THE WITNESS: Yes, sir.
9 THE COURT: No offense.
10 THE WITNESS: I just wanted --
11 THE COURT: If you want the clerk to
12 pass -- actually pass it through, that's fine, or you
13 can hold it.
14 THE WITNESS: Maybe as I take it apart,
15 maybe the clerk could actually pass some of the
16 pieces through. It's up to you.
17 THE COURT: Well do you have something to
18 put it in?
19 THE WITNESS: Let me proceed on this.
20 Thank you, Your Honor.

21 A. And you'll notice that the front end is the
22 carbon heat source. The carbon heat source is
23 carefully prepared carbon. It's extruded. It
24 actually has very small holes in the -- in the --
25 along the center core of the carbon, and that's where

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1 the air comes through once this carbon is lit and
2 begins to burn. Now the back end, of course, looks
3 like a normal filter. This happens -- this one
4 happens to be made of polypropylene.
5 Let me tear the cigarette directly in half, and
6 we'll look at the mouth endpiece first. You'll see
7 the roll of tobacco paper right here that's in front
8 of the filter, and it is a type of reconstituted
9 tobacco. Behind it -- behind it is the filter, okay,
10 so just a very inefficient filter. And I'll open up
11 the paper. See, we're right here, the tobacco paper
12 filter. And I can even stretch it out. It's not the
13 recon that we saw before, but it is a tobacco paper
14 that's gathered and it's fitted together into this
15 plug.
16 Now let's turn to the front end of the
17 cigarette. And if I have a pen, I can actually --
18 you'll notice first of all you see the aluminum --
19 the end of the aluminum capsule in the center, and
20 around it is the tobacco jacket. I'm going to push
21 that aluminum capsule right out of the front.
22 There's the glass insulator mat that surrounds the
23 burning heat source, and then back here is tobacco

24 that surrounded this aluminum capsule.
25 Now you'll notice that the carbon heat source is
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1 actually inserted into the front end of this capsule.
2 The capsule has two slots on the back, and that's
3 where the vapors come out, then they begin to cool
4 and form smoke. And I'm actually getting this carbon
5 all over my finger.

6 Let me break open the substrate capsule. Okay,
7 I just snapped it in two, and I pour out in my hand
8 the aluminum -- the alumina beads that contain
9 tobacco materials. And it's a lot of glycerin, a
10 little bit of tobacco and a little bit of nicotine
11 that comes with that tobacco. So it's this that's
12 heated and generates most of the smoke.

13 The tobacco jacket here contributes to the
14 flavor because some air is drawn down that heated
15 tobacco. So that's generally the construction.

16 THE COURT: Michele, pass it to the jury.

17 MR. WEBER: Thank you.

18 (Disassembled Premier cigarette displayed
19 to the jury by the clerk.)

20 MR. WEBER: Thank you, Your Honor.

21 BY MR. WEBER:

22 Q. Now Dr. Townsend, have you prepared a blowup of
23 a chart -- of a photograph that appears at page 125
24 of the monograph relating to the tar that's trapped
25 on the filter using the FTC method?

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1 A. Yes, I have. I think it's down here.

2 Q. Put that up and explain that to the ladies and
3 gentlemen of the jury, please.

4 A. Okay. If you recall when we were talking about
5 the FTC test method before, I said that the method
6 describes a very efficient glass fiber mat filter to
7 collect all the particles when a cigarette is smoked
8 on a smoking machine, then you weigh that to
9 determine what the tar level is for a cigarette.
10 This round circle, white circle, is one of those --
11 is -- is those Cambridge filter mats. They're
12 extremely efficient for trapping particles in the
13 size range of cigarette smoke.

14 Now what we have here is -- is an exhibit that
15 shows different tar level cigarettes with the tar
16 smoked on to these pads using a smoking machine. In
17 the first case, this is the tar collected for a
18 non-filtered cigarette which delivers about 40
19 milligrams; and then the next one is a full-flavored
20 cigarette which delivers 20 milligrams, it's still in
21 the high side of the average today; then a full-
22 flavor low tar, which delivers 11 milligrams; an
23 ultralight tar cigarette, which delivers about six
24 milligrams; and then finally an ultralight tar
25 cigarette that delivers two milligrams. So we've

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1 gone from 40 to two. And I suppose it's obvious that
2 the lower the tar, the lighter the coloration on the
3 Cambridge filter pad.

4 The far right-hand corner bottom is Premier
5 smoke collected on a Cambridge filter pad, and you'll
6 notice that it's not colored, in spite of the fact
7 that it delivers eight milligrams of total
8 particulates. So eight milligrams of total
9 particulates would place it somewhere between this
10 six and this 11 in color if it contained all of the
11 combustion products and pyrolysis products of
12 tobacco, which it doesn't. It's primarily glycerin,
13 a small amount of tobacco flavors, and nicotine. So
14 you'll see that the Cambridge pad is -- is not
15 colored.

16 MR. WEBER: Your Honor, I just noticed,
17 this is X1422. It is -- we changed the titles on
18 this. It's a demonstrative, but the substantive
19 pictures are the same as in the book. I'd move that
20 for demonstrative purposes, X1422. And I apologize
21 to the court for neglecting to notice that.

22 MR. CIRESI: I have no objection, Your
23 Honor.

24 THE COURT: Court will receive X1422 for
25 illustrative purposes.

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1 MR. WEBER: Thank you. I'm sorry, Your
2 Honor. Thank you, Dr. Townsend.
3 BY MR. WEBER:

4 Q. Now did Reynolds undertake an analysis of
5 comparing the constituents of tar from a reference
6 cigarette to compare to the constituents of tar from
7 the Premier cigarette?

8 A. We did. We did extensive comparisons of Premier
9 to reference cigarettes.

10 Q. And this is a blowup of Fig. 4.2.1-1 from page
11 135 of the monograph, and is that a blowup of the
12 total particulate matter for a reference cigarette;
13 that is, a traditional cigarette?

14 A. It is. This is a pie chart of the composition,
15 the general composition of smoke from, in this case,
16 a 1R4F Kentucky reference cigarette.

17 MR. CIRESI: Your Honor, may we know if the
18 reference cigarette is a commercial cigarette or not?
19 Foundation, Your Honor.

20 BY MR. WEBER:

21 Q. Is there a standard reference cigarette used by
22 scientists both within the cigarette industry and
23 without to conduct tests against?

24 A. There are standard reference cigarettes. 1R4F
25 is one that's provided by the University of Kentucky.

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1 Q. All right. And that was the comparison that was
2 made?

3 A. The comparison was made between Premier and
4 Kentucky reference -- 1R4F reference cigarette

5 purchased from the University of Kentucky.

6 Q. All right. Were you --

7 Had you finished completing the description of
8 that?

9 A. No, sir.

10 If one looks at this pie chart, and I'll just be
11 very brief, this represents the composition of the --
12 of the particulate material that exits the mouth end
13 of this tobacco-burning 1R4F reference cigarette.
14 This reference cigarette delivers 11 milligrams of
15 particulates, and it turns out that most of the
16 weight of that total particulate material is that
17 large combination, that large mixture of many, many
18 constituents that are products of pyrolysis and
19 combustion, in this case about eight milligrams or
20 about 72 percent. In this particular example there's
21 about six, seven percent glycerol, glycerin, and in
22 cigarettes, manufacturers add glycerin to help hold
23 moisture on the cigarette so that it doesn't dry out
24 rapidly. It's a humectant. Also in the TPM or the
25 total particulate material there's about 11 percent

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1 water and about seven percent nicotine. So that's
2 the general composition of the particulates from this
3 tobacco-burning cigarette.

4 Q. Now on page 136, is there a chart doing that
5 same analysis for Premier?

6 A. Yes.

7 Q. Doctor, I'd like to -- woops.

8 Put that one down there for comparative
9 purposes.

10 A. Okay.

11 Q. Now could you explain the chart that you placed
12 on top, the one from page 136 of the monograph that
13 relates to the new cigarette prototype discussed in
14 the monograph.

15 A. Yes, I will. And this again represents the
16 overall composition -- composition of the total
17 particulate matter, but for Premier. But it's done
18 in the same way as the earlier chart, and it turns
19 out that for Premier, most of the weight of the
20 particulate, about 51 percent, is water. The next
21 most predominant material is glycerin or glycerol,
22 and that's 37 percent. Now it's that glycerin that
23 will condense and form the droplets or the
24 particulates as opposed to having a lot of tobacco
25 pyrolysis products as in this case. So the glycerin

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1 and water are the primary components of the aerosol
2 particulates. A small level of propylene glycol,
3 which is also added to help form the aerosol --
4 propylene glycol is a compound very similar to
5 glycerin or glycerol, and you notice it's about three
6 percent. About two percent nicotine in the smoke, in
7 the particulates, and in contrast to this cigarette
8 that burns where most of the weight of the
9 particulate was this complex composition of other

10 materials, here we see only five percent of the
11 weight is that -- is a complex mixture of other
12 materials. So we've completely changed the relative
13 proportions of materials in the smoke -- or in the
14 TPM of that product.

15 Q. Did Reynolds then undertake a study of the
16 chemistry of the smoke?

17 A. We did. We did extensive chemistry of the smoke
18 of Premier versus reference products.

19 Q. And let me show you a blowup of Table 4.3-1 --

20 MR. CIRESI: Page number, please.

21 MR. WEBER: Yes. And this is from page 151
22 and 152 in the monograph, but we put it on one board.

23 Q. Let me move that a little closer because it's
24 got small numbers, if I could.

25 Now could you explain this chart which is

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1 labeled "Specific Mainstream Components," and
2 particularly whether or not there was a comparison
3 made to the reference cigarette regarding smoke
4 chemistry.

5 A. What this chart lists -- and it is taken from
6 the Premier monograph -- is a list of mainstream
7 constituents, compounds in the mainstream smoke, and
8 this is their Chemical Abstracts Registry number, so
9 that -- that's not important to this discussion.
10 This just shows where the properties of those
11 compounds can be found. The important information is
12 over here under "Amount," and it's comparing the 1R4F
13 tobacco-burning product with the TM-6, or that's the
14 Premier product, and then we finally calculate the
15 percent change of the Premier versus the tobacco-
16 burning product.

17 And we'll step down through some -- just some of
18 these very quickly. Nicotine we see is reduced 62
19 percent for Premier versus this tobacco-burning
20 product. Carbon -- carbon monoxide is reduced only
21 three and a half percent, and that's because you've
22 got a burning carbon heat -- heat source or fuel
23 source. But you'll see that if we step down through
24 the rest of these, there are major reductions in the
25 constituents: 99.5, 95, here's one that's only five

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1 percent down, 93 percent, 83. And we see most of
2 them are in the 80 to 90 percent reduction compared
3 to the tobacco-burning product.

4 Q. Okay, Dr. Townsend, if you'd resume your seat.

5 Were biological tests of various types conducted
6 on the Premier cigarette?

7 A. Yes, there were a number of biological assays
8 conducted on the Premier cigarette.

9 Q. Were any of those conducted within R. J.
10 Reynolds?

11 A. Yes, some were conducted within R. J. Reynolds
12 and some were conducted at contract laboratories
13 outside of Reynolds, and there were some tests that
14 were conducted at both places.

15 Q. And are the test results set forth in the
16 monograph?
17 A. They are.
18 Q. How did Premier fare on the biological tests as
19 compared to the reference cigarette?
20 MR. CIRESI: Excuse me, there's no
21 foundation for this witness to interpret those
22 results, Your Honor.
23 THE COURT: Are you referring to what's in
24 the book there?
25 MR. WEBER: Yes. That's all.
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1 THE COURT: Maybe you should refer to the
2 page so we know what he's talking about.
3 MR. WEBER: Well I guess the issue is this
4 whole -- there's many pages in there, so maybe I'll
5 just go on, Your Honor, rather than go through the
6 entirety.
7 BY MR. WEBER:
8 Q. What was the reaction overseas to the
9 announcement and development of the Premier
10 cigarette?
11 MR. CIRESI: Objection, Your Honor,
12 irrelevant.
13 THE COURT: Sustained.
14 Q. Did scientists of respected institutions
15 overseas comment upon the science supporting the
16 Premier cigarette?
17 MR. CIRESI: Objection, irrelevant.
18 THE COURT: No, you may answer that.
19 A. There were a number of reactions of scientists
20 overseas as well as here. We provided this Premier
21 monograph to scientists around the world and we did
22 get a lot of reaction. Most of the reaction I would
23 characterize from overseas as being extremely
24 positive of Premier and the chemistry reductions and
25 biology reductions that were accomplished.
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1 Q. And what was --
2 How would you compare that reaction to the
3 reaction here in the United States?
4 A. I think the reaction in the United States was
5 mixed. Some scientists saw it for the progress that
6 we believed it to be. Many scientists, however,
7 attacked Premier and actually sought to ban the
8 product from the marketplace.
9 Q. Could you turn to the 1989 Surgeon General's
10 report, which is Exhibit 3821, at page 318.
11 A. Okay.
12 Q. I can't --
13 Well why don't you start at the top of that
14 paragraph, "Continued health concerns...?"
15 A. You'd like me to read it?
16 Q. Yes, sir.
17 A. "Continued health concerns among smokers are
18 likely to encourage the cigarette industry to
19 continue to design new cigarettes that are perceived

20 as less hazardous. Besides filtered, low-yield
21 cigarettes, other 'high-tech' cigarettes have been
22 marketed that may appear to smokers to be less
23 hazardous. These include one brand with a recessed
24 filter and another with a 'flavor-control filter'
25 that apparently allows the smoker to regulate the tar

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1 yield of individual cigarettes," references Davies
2 1987 -- Davis, sorry. "The R. J. Reynolds Tobacco
3 Company announced in September 1987 plans to market a
4 new product that heats rather than burns tobacco. R.
5 J. Reynolds asserts that the product is a cigarette,
6 and it has commonly been referred to in the press as
7 a 'smokeless cigarette'. In a press release, the
8 company's chief executive officer stated that 'a
9 majority of the compounds produced by burning tobacco
10 are eliminated or greatly reduced, including most
11 compounds that are often associated with the smoking
12 and health controversy' (R. J. Reynolds 1987). The
13 American Medical Association (1988) and the Coalition
14 on Smoking or Health (1988) have filed petitions with
15 the U.S. Food and Drug Administration (FDA) seeking
16 FDA regulation of this new product as a drug or
17 medical device based on implicit health claims, among
18 other reasons. As of November 1988, these petitions
19 were under review by FDA -- by the FDA. In October
20 1988, R. J. Reynolds began test marketing the
21 product, named Premier, in three cities (Phoenix and
22 Tucson, Arizona, and St. Louis, Missouri) (Chapter
23 7)."

24 Q. Now did R. J. Reynolds provide information on
25 Premier to the FDA?

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1 A. We did.
2 Q. Did R. J. Reynolds provide information to the
3 FTC on Premier?
4 A. We --
5 MR. CIRESI: Your Honor, I'm going to
6 object to that as being irrelevant unless they made
7 an application to have it regulated as a drug.
8 THE COURT: Well he can answer the
9 question.
10 A. R. J. Reynolds provided information to both the
11 Food and Drug Administration and to the Federal Trade
12 Commission, quite a lot of detailed information.
13 Q. Can you turn to tab 104, AZ008285.
14 A. Okay.
15 Q. And is that a letter sent by Surgeon General
16 Koop in 1988 to the Commissioner of the Food and Drug
17 Administration regarding Premier?
18 A. This is a letter from Dr. Koop, the Surgeon
19 General, to Frank Young, who was then Commissioner of
20 Food and Drug Administration.
21 MR. WEBER: Your Honor, I'd move AZ008285
22 for the non-hearsay purpose of simply establishing
23 what the Surgeon General said about the Premier
24 product.

25 MR. CIRESI: No objection, Your Honor.
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1 THE COURT: Court will receive AZ008285.
2 BY MR. WEBER:
3 Q. Did Surgeon General Koop take a position with
4 respect to whether Premier should be banned?
5 MR. CIRESI: Misstatement of the document,
6 Your Honor.
7 THE COURT: Okay. Rephrase the question,
8 counsel.
9 Q. Did Surgeon General Koop take the position as to
10 whether the FDA should take jurisdiction over the
11 Premier product and make it available through
12 prescription only?
13 A. Surgeon General Koop did ask Frank Young, the
14 Commissioner of FDA, to assert -- to exercise
15 jurisdiction over Premier as a novel
16 nicotine-delivery system.
17 Q. And if you could look at that last paragraph on
18 the first page, and could you read to the ladies and
19 gentlemen of the jury what the Surgeon General's
20 position was about statements by Reynolds that
21 address the fact that the smoke from Premier reduced
22 or eliminated many compounds.
23 A. Yes. The title of this section is "Product
24 health claims are implicit. In its public statements
25 and marketing plans, RJR states regarding the
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1 product: 'a majority of the compounds produced by
2 burning tobacco are eliminated or greatly reduced,
3 including most compounds that are often associated
4 with the smoking and health controversy.' To me,
5 this suggests a health claim that the -- that the
6 product is 'safe' or 'safer' than conventional
7 products, which could result in reduced quitting by
8 smokers, increased relapse by ex-smokers, and
9 increased initiation by adolescents."
10 Q. I'd like you now to turn to tab 105, if you
11 would. I'm sorry, it's BYS000124. I'm going to ask
12 if you can identify that as a letter from the
13 Minnesota Department of Health, from the Commissioner
14 of Health, dated February 2, 1988, to the FDA.
15 A. That's correct.
16 MR. WEBER: Your Honor, I'd move the
17 admission of BYS000124.
18 MR. CIRESI: No objection, Your Honor.
19 THE COURT: Court will receive BYS000124.
20 BY MR. WEBER:
21 Q. And what was the position of the Commissioner of
22 Health and the Minnesota Department of Health with
23 respect to the Premier product which reduced or
24 eliminated these compounds?
25 A. The Commissioner of Health from the Minnesota
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1 Department of Health is essentially asking the FDA
2 commissioner to ban the product.

3 MR. CIRESI: Objection, it's a misstatement
4 of the document, Your Honor.

5 THE COURT: Sustained.

6 Q. Is the Minnesota Health Commissioner asking the
7 FDA to take jurisdiction over the product?

8 A. That's correct.

9 Q. And if the FDA took jurisdiction, could it be
10 sold over the counter?

11 A. Absolutely not.

12 Q. Now was Premier ever marketed in Minnesota?

13 A. We did not test market Premier in Minnesota.

14 Q. Where was it test marketed?

15 A. It was test marketed -- test marketed in three
16 locations, Phoenix, Arizona, Tucson, Arizona, and St.
17 Louis, Missouri.

18 Q. And did every pack of Premier carry the Surgeon
19 General's warning?

20 A. Certainly did.

21 Q. How did Premier fare in the test markets,
22 doctor?

23 A. Well unfortunately Premier failed in the test
24 market. There were a number of deficiencies in the
25 acceptance of that product. The two most important

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1 ones were -- were it was difficult to light, that
2 carbon heat source in the front was not as easy to
3 light as other cigarettes, and some -- many smokers
4 found that difficult and objectionable. The taste
5 characteristics of this cigarette were quite
6 different, too, as you can imagine based on what
7 we've seen on the chemistry, so it didn't taste like
8 other cigarettes, it was different, and most smokers
9 did not accept that product for those two primary
10 reasons.

11 Q. Now I want you to assume that earlier in this
12 case plaintiffs' expert, Professor Jaffe, an
13 economist from Boston, showed the jury a document
14 from Brown & Williamson that implied that Reynolds
15 could have fixed the taste problems with Premier. Do
16 you think Reynolds could have fixed the taste
17 problems with Premier?

18 A. As close as I was to that development project,
19 we put everything we knew in to making that product
20 as acceptable as possible. I don't think there were
21 any easy fixes to the taste issue, to the taste
22 problem, so I find that very difficult to believe.

23 Q. Was it claimed by Reynolds that Premier was a,
24 quote, safer, unquote, or risk-free cigarette?

25 A. No. R. J. Reynolds didn't make any claims about

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1 Premier suggesting that it was a safe or safer
2 cigarette. Absolutely not.

3 Q. Did --

4 Has any regulatory or scientific body here in
5 the United States identified a single test or battery

6 of tests that are generally accepted as demonstrating
7 whether one cigarette is safer than another?
8 A. There is no generally --
9 Well there is no recognized battery of tests or
10 protocols for evaluating whether one cigarette is
11 safer than another. There have certainly been a lot
12 of discussions about the types of biological tests
13 and the types of chemistry end points that one may
14 put together into a overall picture and -- and make
15 informed judgments about whether one cigarette ought
16 to be safer than another, but there is no -- there is
17 no agreed-on measure of progress in defining whether
18 one cigarette is safer than another.
19 Q. We saw a document yesterday that dealt with the
20 National Cancer Institute saying it was going to, as
21 part of the Tobacco Working Group, issue guidelines
22 on what made a cigarette less hazardous. Do you
23 remember that?
24 A. Yes.
25 Q. And you said yesterday those guidelines weren't
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1 issued as part of the Tobacco Working Group; --
2 A. Correct.
3 Q. -- correct?
4 Has the National Cancer Institute or any other
5 body of the federal government issued such guidelines
6 since then?
7 A. No, they haven't.
8 Q. Let's put aside Premier's commercial failure for
9 a moment, Dr. Townsend, and talk about the
10 development path Premier was on.
11 Would it have been feasible for Reynolds to
12 develop Premier sooner than it did?
13 A. No, not at all. In the Premier development, it
14 took the coming together of a number of different
15 ideas into a critical mass, that it was the right
16 time with the right people and the right ideas and
17 the right historical knowledge of cigarettes as well.
18 The other thing is, and very importantly, is that
19 there were no manufacturing techniques for developing
20 such a complicated product. R. J. Reynolds had to
21 work with suppliers that we've never worked with
22 before to develop very complex machinery, for
23 example, to insert the heat source into the aluminum
24 capsule. Another reason why it really wasn't
25 technically feasible is the best substrate material,
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1 those little alumina beads, actually wasn't invented
2 until right before we began using them in Premier.
3 Q. Do you know of any cigarette that's ever been
4 put on the market that simplified and reduced smoke
5 chemistry to the degree Premier did?
6 A. I'm not aware of any chemistry that's come close
7 to simplifying chemistry as much as Premier has.
8 Q. Now what conclusion could you draw as a
9 cigarette designer with the Reynolds' experience with
10 Premier?

11 A. I think there's a very important conclusion, and
12 that is that consumer -- that new products must be
13 consumer acceptable. Obviously Premier failed in
14 the -- in the test markets. We didn't launch that
15 product nationally because it was an unacceptable
16 product, it was clearly unacceptable, and for any
17 product to make progress in addressing
18 smoking-and-health issues, consumer acceptance is
19 essential.

20 Q. Now after the failure of Premier, did Reynolds
21 abandon its efforts in the area of cigarettes that
22 primarily heated instead of burned tobacco?

23 A. No. We -- we obviously stopped the Premier
24 project, but we took what we had learned from the
25 Premier project and moved it immediately into a new

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1 project that ultimately has led to the development of
2 Eclipse. We tried to learn from the deficiencies of
3 Premier, what consumers told us in the marketplace
4 they saw as deficiencies, and we began an intensive
5 development effort to fix those in a new product.

6 MR. CIRESI: Your Honor, if they're going
7 to go any further on Eclipse, then we get into a
8 discovery issue.

9 MR. WEBER: Your Honor, on that point, if
10 the court and Mr. Ciresi will remember, in Mr.
11 Schindler's testimony the Eclipse issue came up, and
12 I commented how they'd asked Dr. Townsend a number of
13 questions about Eclipse, and the court said we could
14 go into the issues that plaintiffs asked Dr. Townsend
15 about during his deposition. So all I intend to
16 do --

17 Each question will be tied to one they asked Dr.
18 Townsend.

19 THE COURT: All right, counsel.

20 MR. WEBER: Thank you.

21 MR. CIRESI: You mean asked Mr. Schindler,
22 not asked Dr. Townsend.

23 MR. WEBER: No, I'm going to ask Dr.
24 Townsend. Did I say it wrong?

25 MR. CIRESI: Yeah, it's -- that's all

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1 right, counsel.

2 MR. WEBER: Okay.

3 THE COURT: We know what you mean.

4 MR. WEBER: It's so rare that we agree with
5 everybody. Mr. Ciresi, I'm glad to take that.

6 BY MR. WEBER:

7 Q. Now were you asked questions about the removal
8 of compounds that were thought to be carcinogenic to
9 animals with respect to the Eclipse chemistry?

10 A. As I recall, there were some questions about
11 that.

12 Q. Does Eclipse reduce such compounds?

13 A. Yes.

14 Q. Does it reduce them to the extent that the
15 Premier cigarette did?

16 A. Not as far as Premier did. There are major
17 reductions. One of the things that Eclipse --
18 MR. CIRESI: Your Honor, that's going
19 beyond. It's going to get into issues beyond the
20 discovery period.
21 THE COURT: Well it hasn't so far, but
22 counsel is aware of the limitations, I assume.
23 MR. WEBER: Yes, absolutely, Your Honor.
24 THE COURT: Okay.
25 Q. And have there been tests on animals done with
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1 respect to the Eclipse smoke?
2 A. Yes, there have.
3 Q. Did you discuss at your deposition the taste
4 characteristics of cigarettes that do not burn
5 tobacco as opposed to a cigarette like Eclipse?
6 A. As I recall, there was some discussion in my
7 deposition on that.
8 Q. And are there challenges to the cigarette
9 designer coming up with an appropriately consumer
10 acceptable taste in such a cigarette?
11 A. There are major challenges in coming up with a
12 consumer acceptable cigarette, and the approach that
13 Eclipse has taken, even from the very early days of
14 the Eclipse project, trying to learn from the failure
15 of Premier, was to burn a very, very small amount of
16 tobacco to try to create enough taste to make that
17 product consumer acceptable but still keep the
18 chemistry very, very low and keep the biological
19 assay results very, very low.
20 Q. And were you asked about the tar and nicotine
21 yields of Eclipse at your deposition?
22 A. As I recall I was.
23 Q. And what are the tar and nicotine yields of
24 Eclipse?
25 A. For Eclipse -- there are actually two versions
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1 of Eclipse, there's a regular and a light. There's
2 not much difference in the tar yield. The regular, I
3 believe, is about four milligrams of tar, and again
4 it's predominantly glycerin, the lights version is
5 about three milligrams per cigarette, and again it's
6 mostly glycerin.
7 Q. Could you turn to tab 96 of a document in
8 evidence, CE000282, and that's Dr. Hoffmann's 1997
9 article.
10 A. Okay.
11 Q. And again, Dr. Hoffmann in his writings has been
12 critical of cigarettes for years; has he not?
13 A. That's correct.
14 Q. At page 356 of that article, did Dr. Hoffmann
15 make some comments about the Eclipse cigarette?
16 A. Yes.
17 Q. I'd like to --
18 And indeed he titled this "ADDENDUM;" correct?
19 A. "ADDENDUM TO THE CHANGING CIGARETTE," correct.
20 Q. I'd like to start over here in the middle of the

21 middle paragraph at the sentence that starts
22 "Concentrations...." Do you see that?
23 A. Yes.
24 Q. Could you read that sentence from Dr. Hoffmann's
25 article.

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1 A. Yes. "Concentrations of carcinogens such as
2 benzo(a)pyrene, 2-aminobiphenyl, and 4-aminobiphenyl,
3 as well as the nicotine-derived N-nitrosamines, which
4 reside in the 'tar,' have thus been effectively
5 lowered by 85 to 95 percent," he references
6 Borgerding, et al, who are R. J. Reynolds chemists.
7 Q. Now --
8 A. And also references Glass. I'm sorry.
9 Q. Does he refer to the possibility of smoker
10 compensation in the next paragraph?
11 A. Yes.
12 Q. Would you read that paragraph, and I want to ask
13 you a question.
14 A. Sure. "While these analytical data compare
15 products smoked under standardized machine-smoking
16 conditions, smokers of the Eclipse are not likely to
17 adhere to such standards but will be drawing puffs
18 with much greater intensity (discussed earlier),
19 namely, up to 4 puffs per minute with an average
20 volume of 55 to 62 milliliters per puff. This
21 practice generates nicotine delivery in the smoke
22 stream that is two- to fourfold above that produced
23 by standardized machine-smoking of cigarettes.
24 Nevertheless, there is still substantial reduction of
25 carcinogenic agents in the smokestream (airstream) of

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1 the Eclipse by comparison to the smoke of low-yield
2 filter cigarettes; results from short-term assays for
3 genotoxicity also indicate that the carcinogenic
4 potential of the smoke of the Eclipse is
5 significantly lower than that from low-yield filter
6 cigarettes."
7 Q. Now is Eclipse currently in test market?
8 A. It is in test market.
9 Q. And where is that?
10 A. There are several test-market locations.
11 MR. CIRESI: Your Honor, we're getting
12 beyond the discovery here.
13 MR. WEBER: That was asked at the
14 deposition, Your Honor. That's the only reason.
15 THE COURT: Let's -- let's move on.
16 MR. WEBER: All right.
17 BY MR. WEBER:
18 Q. Now doctor, based on the background you've
19 described for us, including your education and
20 experience, do you have an opinion to a reasonable
21 degree of scientific and professional certainty as to
22 whether Reynolds and its principal domestic
23 competitors, Philip Morris, Lorillard and Brown &
24 Williamson, have developed and put into the
25 marketplace cigarettes that responded to the theories

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1 and suggestions of the scientific community over the
2 past 40 years?

3 MR. CIRESI: Object to the form of the
4 question. It's overbroad.

5 THE COURT: Objection is sustained.

6 BY MR. WEBER:

7 Q. Let me ask you that question just with respect
8 to Reynolds, doctor.

9 Do you have an opinion to a reasonable degree of
10 scientific and professional certainty as to whether
11 Reynolds has researched, developed, and put into the
12 marketplace cigarettes that have responded to
13 theories and suggestions of the scientific community
14 over the past 40 years?

15 A. Yes, I do.

16 Q. And what is that opinion?

17 MR. CIRESI: Objection, foundation.

18 THE COURT: You may answer that.

19 A. My very strong opinion is that R. J. Reynolds
20 Tobacco Company has developed products and placed
21 them in the market that directly respond to
22 smoking-and-health issues that are raised by the
23 scientific community and others.

24 Q. Now do you have --

25 Do you have an opinion to a reasonable degree of

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1 scientific and professional certainty as to whether
2 R. J. Reynolds has designed and made available to
3 smokers cigarettes that incorporate current state of
4 the art of cigarette design?

5 A. Yes, I do.

6 Q. And what's that opinion?

7 A. I believe that R. J. Reynolds -- from my
8 experience at R. J. Reynolds it's clear to me that
9 the company has at every point in time implemented
10 state-of-the-art technology in the marketplace as
11 it's developed.

12 Q. Dr. Townsend, I want you to assume that
13 plaintiffs' counsel told the jury on January 26th
14 that, quote, the defendants would do nothing to
15 change their products unless and until they were
16 required to do so by government or as a result of
17 being accountable in litigation, unquote. Based on
18 your 20 years at Reynolds, do you believe that's a
19 statement supported by fact?

20 A. I don't believe that that's a statement by fact,
21 and -- of fact, and I actually have a hard time with
22 that, frankly, because I've spent most of my
23 professional career at Reynolds trying to design
24 cigarettes to make differences in the marketplace
25 and cigarettes that respond to smoking-and-health

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1 issues. I don't believe that it takes forcing to

2 make a difference.
3 Q. Dr. Townsend, are you a smoker?
4 A. Yes, I am.
5 Q. RJR brand?
6 A. Yes.
7 MR. WEBER: No further questions, Dr.
8 Townsend. Thank you.
9 THE COURT: Do you want to take a short
10 recess?
11 MR. CIRESI: We should move stuff around,
12 Your Honor, yes.
13 THE COURT: All right. Let's recess.
14 THE CLERK: Court stands in recess.
15 (Recess taken.)
16 THE CLERK: All rise. Court is again in
17 session.
18 (Jury enters the courtroom.)
19 THE CLERK: Please be seated.
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1 (Side-bar discussion as follows:)
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(Side-bar discussion concluded.)

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CROSS-EXAMINATION - DAVID E. TOWNSEND

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1 THE COURT: Counsel.
2 MR. CIRESI: Thank you.
3 Good afternoon, ladies and gentlemen.
4 (Collective "Good afternoon.")
5 CROSS-EXAMINATION
6 BY MR. CIRESI:
7 Q. Good afternoon, sir.
8 A. Good afternoon.
9 Q. We met briefly this morning before lunch;
10 correct?
11 A. That's correct.
12 Q. Now you don't have any evidence at RJR to
13 confirm that low tar cigarettes are safer than any
14 other cigarette; do you?
15 A. There's no evidence at RJR that low tar
16 cigarettes are safer than higher tar cigarettes
17 because there's no way to prove that one cigarette is
18 safer than another. I think a number of people have
19 made that reference. The Surgeon General has
20 suggested that they may be, and others.
21 Q. I -- I just asked whether you at RJR had that.
22 Did you understand my question?
23 A. I understood your question.
24 Q. If, in the course of my examination of you, sir,
25 you do not understand a question that I ask you,

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1 please tell me. All right?
2 A. Oh, yes.
3 Q. And if you don't hear me, let me know that also.
4 Okay?
5 A. Be happy to.
6 Q. All right.
7 Now you haven't drawn any conclusions yourself
8 about what causes risks in cigarettes because you're
9 simply not an expert in that area; isn't that
10 correct?
11 A. Are you --
12 You're referring to me personally?
13 Q. Yes.
14 A. I'm not an expert in the area of what causes
15 risks. Certainly not.
16 Q. And you can't make any connection to biological
17 relevance from exposure to carcinogens such as
18 benzopyrene or any other carcinogen because you're
19 not an expert; correct?
20 A. I'm a chemist. I'm certainly not a biologist.
21 I can't draw any conclusions about biological

22 relevance of particular chemicals in a complex
23 mixture, and I certainly can't draw any -- any
24 connection or -- or -- connection between certain
25 biological assays and human disease.

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1 Q. And you understand that it has been reported in
2 the literature and by almost every medical
3 organization in the world that cigarette smoking
4 causes over 400,000 deaths in this country alone;
5 correct?

6 A. I've seen that a number of times.

7 Q. You're also aware that over 82 percent of people
8 who start smoking start before the age of 18; aren't
9 you?

10 MR. WEBER: Objection, Your Honor, it's
11 beyond the scope.

12 THE COURT: Well you can answer that. I
13 don't think we should get into this much.

14 A. I'm not aware of that statistic at all.

15 Q. You've never heard that?

16 A. What did you say, 82 percent?

17 Q. Yes.

18 A. I'm not aware of that.

19 Q. Are you aware that the overwhelming majority
20 start before the age of 18?

21 A. I've heard allocations -- allegations that a
22 majority of smokers start under-age. I don't know
23 whether that's true or not.

24 Q. Now you have 450 people in the R&D at Philip
25 Morris; is that right?

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1 A. This is R. J. Reynolds you're talking about.

2 Q. Excuse me, R. J. Reynolds. Is that right?

3 A. We have approximately 450 scientists or staff in
4 the research and development department.

5 Q. And you told us that approximately 70 to 75 of
6 those are Ph.D.'s?

7 A. Approximately.

8 Q. And approximately 50 to 55 hold a master's
9 degree?

10 A. That's approximately correct.

11 Q. Do you know if any of them are qualified to
12 state whether or not smoking causes disease? Do you
13 know?

14 A. I don't know. We have a number of toxicologists
15 and biologists and experts in the area. I don't know
16 if they're qualified or not to -- to deal with that.

17 Q. Do you know how many hold the opinion that
18 smoking causes disease of those 450 people?

19 A. I don't know. I haven't done a poll among all
20 450 people.

21 Q. That's what I was going to ask you.

22 So as the heard of research and development at
23 RJR, you've never done such a poll of your own
24 scientists; correct?

25 A. Well first, I'm not head of research and

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1 development. I report to the senior vice-president
2 who is in charge of research and development. I'm
3 just in charge of product development and analytical
4 chemistry research and analytical chemistry support
5 for the company.

6 Q. Such a poll has never been conducted; correct?

7 A. Among the staff at R. J. Reynolds --

8 Q. Yes.

9 A. -- research and development, I'm not aware of
10 such -- such a poll.

11 Q. So you wouldn't know how many hold the opinion
12 that smoking causes lung cancer?

13 A. No.

14 Q. You don't know how many would hold the opinion
15 that smoking causes chronic obstructive pulmonary
16 disease.

17 MR. WEBER: Objection, Your Honor, it's
18 beyond the scope. Counsel objected to anything that
19 touched on biological effects during the direct.

20 MR. CIRESI: Your Honor --

21 MR. WEBER: Offered no opinion -- the
22 witness offered no opinion on disease causation.

23 MR. CIRESI: He's testified about
24 responding to public acceptability. He is in charge
25 of product development. This is entirely within the

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1 scope of what he has testified to.

2 THE COURT: All right. Go ahead, counsel.

3 Q. Do you know how many hold the opinions that
4 cigarette smoking causes bladder cancer?

5 A. I don't know.

6 Q. Do you know how many hold the opinion that
7 cigarette smoking causes chronic heart disease?

8 A. I don't know.

9 Q. Do you know how many hold the opinion that
10 cigarette smoking causes kidney cancer?

11 A. I don't know.

12 Q. Do you know how many hold the opinion that
13 smoking causes laryngeal cancer?

14 A. I don't know that.

15 Q. Do you know how many hold the opinion that
16 smoking causes oral cancer?

17 A. I have no idea.

18 Q. Do you know how many hold the opinion that
19 smoking causes pancreatic cancer?

20 A. I don't know.

21 Q. Do you know how many hold the opinion that
22 smoking causes peptic ulcers?

23 A. I don't know.

24 Q. Do you know how many hold the opinion that
25 smoking causes diminished health status?

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1 A. Diminished what?

2 Q. Health status.

3 A. I don't know.
4 Q. Do you know if anyone at RJR has ever conducted
5 such a poll to find out the answer to any of those
6 questions from its 450 scientists?
7 A. I'm not aware of such a poll.
8 Q. Do you know how many of the 450 scientists
9 believe that nicotine is addictive?
10 MR. WEBER: Object to the reference "450
11 scientists," Your Honor, it's 450 employees.
12 THE COURT: Rephrase the question, counsel.
13 MR. WEBER: It's also -- I also did not ask
14 this witness his opinion on whether cigarettes were
15 addictive. It is beyond the scope, Your Honor.
16 THE COURT: You may answer the question if
17 it's rephrased.
18 Q. Sir, do you know how many of the 450 people in
19 your research and development department, which
20 include Ph.D.'s and masters in science, hold the
21 opinion that nicotine is addictive?
22 A. I have no idea. I have not done a poll on that
23 either.
24 Q. Has RJR ever done a poll of its research and
25 development department to ascertain that question?

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1 A. I'm not aware of such a poll.
2 Q. Do you know how many of the 450 people in your
3 research and development department, including the
4 Ph.D.'s and those who hold a masters degree, believe
5 that the cigarette is a drug-delivery device?
6 A. I have not done a poll on that either.
7 Q. So you don't know how many hold that opinion.
8 A. I have no idea.
9 Q. So as far as you know, Dr. Townsend, 400 or 450
10 of the people in that department, excluding yourself,
11 could hold these opinions; couldn't they, as far as
12 you know?
13 A. Well as I said, I have no idea, so there's no
14 way for me to speculate.
15 Q. So it could be everybody but you; isn't that
16 right?
17 A. There's no way for me to speculate. I'm sorry.
18 Q. Now you said you attended a conference with
19 Dietrich Hoffmann.
20 A. That's correct.
21 Q. You attended a conference with Dr. Henningfield?
22 A. Yes.
23 Q. You attended a conference with Dr. Benowitz?
24 A. That's correct.
25 Q. You attended a conference with Dr. Shopland?

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1 A. That's correct.
2 Q. And you have given some statements about what
3 they believe or don't believe or have said about
4 cigarettes; haven't you?
5 A. There have been some statements from some of
6 those scientists.
7 Q. And you're aware, are you not, based on your

8 talking with them, that they all believe the industry
9 has deceived the public with respect to what it
10 knows?

11 MR. WEBER: Let me object, Your Honor.
12 Counsel is testifying with that question.

13 THE COURT: Rephrase it, counsel.
14 BY MR. CIRESI:

15 Q. Have you heard that statement made by them, sir?

16 A. That --

17 I'm sorry, can you repeat the question?

18 Q. That the industry has deceived the public with
19 respect to what it knew about its product.

20 A. Clearly those scientists are -- believe that
21 people by and large, my -- my understanding is that
22 they believe that people should not smoke. I have
23 never heard any one of them say in my presence
24 anything of the sort that you just phrased.

25 Q. You're certain of that.

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1 A. As far as I can recall.

2 Q. As far as you can recall.

3 You know they all believe, because they've
4 stated it in your presence, that smoking causes the
5 diseases I just mentioned; don't you?

6 MR. WEBER: Let me object, counsel is
7 testifying again, Your Honor.

8 THE COURT: No, you may answer that.

9 A. I think the scientists you name -- named by and
10 large, as best I know, believe themselves that
11 cigarette smoking causes cancer, as do most of the
12 people in this country.

13 Q. And sir, all of those scientists, based on your
14 discussion with them, believe that nicotine is
15 addictive; don't they?

16 A. I don't know whether that's true or not. Again,
17 I haven't talked to each one of them about addiction
18 and whether nicotine is addictive. I don't know. I
19 know some of them do. I don't know whether all of
20 them do.

21 Q. Now you said that you carefully follow the
22 Surgeon General's reports; is that correct?

23 A. I've read bits and pieces of most of the Surgeon
24 General's reports, certainly the parts that pertain
25 to cigarette design.

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1 Q. Have you read only bits and pieces?

2 A. I think there may have been one, particularly
3 the 1981 Surgeon General's report, that I've managed
4 to get through most of it if not all.

5 Q. Have you done that recently?

6 A. But --

7 Q. I'm sorry, you weren't done.

8 A. But I -- I would say that most of the Surgeon
9 General's reports, to me, I go through and read for
10 the things that I understand, the things that I know
11 about and the things that I do in my job --

12 Q. So --

13 A. -- in the area --
14 Q. -- you as a scientist --
15 MR. WEBER: Your Honor, the witness was
16 interrupted in the middle of his answer.
17 THE COURT: Were you finished?
18 A. Well I just had one more phrase, in -- in my job
19 responsibilities.
20 THE COURT: Go ahead.
21 Q. So you as a scientist at RJR pick and choose
22 what you will read in the Surgeon General's reports;
23 correct?
24 A. I don't think that's a fair characterization at
25 all, because I do read the things that I understand,
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1 the things that are important for me to -- to do my
2 job. You've already made it very clear that I'm not
3 a biologist and that I don't understand biological
4 implications of many things, and that's a lot of
5 what's in the Surgeon General's reports. But I do
6 read the issues on cigarette design, suggestions for
7 modifications of cigarette design that may address
8 smoking-and-health issues.
9 Q. So you as a Ph.D. do not understand those
10 portions which have biological implications, so you
11 don't read that; fair enough?
12 A. I think that's a generalization. I don't
13 understand details of biology nor toxicology. I do
14 understand superficially some things in biology, I'm
15 certainly not ignorant in the area, and I'm not
16 anywhere close to being an expert in the area.
17 Q. So you don't --
18 A. I do --
19 Q. I'm sorry.
20 A. I do look at some things on biology, whether
21 it's internal research that we conduct at Reynolds,
22 whether it's external research, or even in the
23 Surgeon General's report. I don't pretend to
24 understand all that's in the Surgeon General's report
25 about biology.

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1 Q. And I believe you said as a result you only look
2 at those portions that pertain to your job; isn't
3 that what you said?
4 A. And --
5 That's exactly what I said, and -- and in -- in
6 that sense there are portions of the biology that do
7 pertain to my job in that they give direction to
8 cigarette design.
9 Do I understand the biology? I'm not an expert
10 in that area. I understand some things, but I'm
11 certainly not an expert.
12 Q. And you would expect the same of, for example,
13 teen-agers under the age of 18. They wouldn't
14 understand the Surgeon General's report; would they?
15 MR. WEBER: I will object as beyond the
16 scope, Your Honor.
17 THE COURT: You can answer that.

18 A. I've run into some bright -- bright students
19 under 18. There -- there may be some biology
20 students under 18 that understand a lot more of it
21 than I do. I don't know. I don't know how to answer
22 your question. I don't know.

23 Q. And you don't know in the general population how
24 many people might understand the biological or other
25 portions of the Surgeon General's reports; do you?

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1 A. Well I have no idea of what proportion of the --
2 of the population, first, reads the Surgeon General's
3 report, and second, understands it. I do know that
4 the conclusions of the Surgeon General's reports are
5 widely disseminated in the popular press, so I think
6 people have a general sense for some of the things
7 that are in Surgeon General's reports.

8 Q. That wasn't what I asked you. I asked you about
9 reading the Surgeon General's report.

10 A. Oh, I'm sorry, maybe I misunderstood your
11 question.

12 Q. Remember, if you misunderstand a question,
13 please let me know. Okay?

14 MR. WEBER: Let me object to that, Your
15 Honor. The question did in fact relate to what the
16 public knew about the Surgeon General reports, so I
17 would object to counsel's commentary.

18 THE COURT: Why don't you re-ask the
19 question, counsel.

20 BY MR. CIRESI:

21 Q. Do you know how many people in the population
22 read the Surgeon General's report?

23 A. I have no idea.

24 Q. You would expect that the vast majority of the
25 people don't read the Surgeon General's reports;

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1 wouldn't you?

2 A. Well I said to your earlier question I have no
3 idea. Are -- are you asking me to guess?

4 Q. Well I don't want you to guess. I just want to
5 know if you know. Do you know?

6 A. I don't know. I have no idea.

7 Q. Now you talked about, I think, seven Reynolds
8 documents on direct. Do you remember that?

9 A. I remember talking about some. I don't recall
10 how many.

11 Q. Very few; correct?

12 A. There were few relative to the total number of
13 documents we talked about.

14 Q. Let me restate it. I think it was eight. Would
15 you accept that number?

16 A. Again, I don't know exactly how many. I'll just
17 have to take your word for it.

18 Q. Now you were not an author of any of those
19 documents; correct?

20 A. That's correct.

21 Q. You were not a recipient of any of those
22 documents.

23 A. I'm not sure. I'd have to go back and look. I
24 don't recall.
25 Q. Do you recall any document being entered into
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1 evidence here during your direct that you authored?
2 A. I think I've already said no, I didn't author
3 any of those.
4 Q. Okay. Do you recall any document being offered
5 into evidence that dealt with a subject matter and
6 investigation into the design of cigarettes that you
7 yourself participated in?
8 A. Not in the documents that were entered in the
9 direct, as I recall.
10 Q. Can you direct your attention, please, to
11 Exhibit 14145. It's in volume two, doctor. We'll be
12 dealing with two volumes, and I'll -- I'll direct you
13 to the volume and the exhibit number, and the exhibit
14 number will be along the tabs.
15 A. All right.
16 Q. 14145. This is entitled the Frank Statement
17 to -- to Smokers. You've seen this before.
18 A. I have seen it before, yes.
19 Q. You've read it; correct?
20 A. Yes. It's been a while since I've read it.
21 Q. And you recall that there's a statement in there
22 that your company, RJR, among others, stated to the
23 public that "We believe the products we make are not
24 injurious to health." Do you see that?
25 A. I see that statement.

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1 Q. Now when that statement was made, it was not
2 sustainable from a scientific standpoint; was it?
3 A. I believe that in science, one cannot prove a
4 negative.
5 Q. So it was not sustainable; correct?
6 A. I think scientific experiments could prove, if
7 one did the right experiments and if in fact this
8 statement were -- if -- if in fact cigarette smoking
9 caused those diseases, and one did successful
10 experiments to demonstrate it, you could only prove
11 that it did cause it, not that it didn't cause it.
12 Q. So this statement when -- when it was made was
13 not sustainable; correct?
14 A. From a strict scientific point of view, one
15 cannot prove a negative, so I don't see that one
16 could make that statement from a strict scientific
17 point of view.
18 Q. So that when it was made, it was false from a
19 scientific point of view; correct?
20 A. I don't think that this statement can be
21 supported from a strict scientific point of view,
22 because you cannot prove a negative in
23 experimentation.
24 Q. So if it could not be sustained, it was false
25 when it was made from a scientific standpoint;

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1 correct?
2 MR. WEBER: Asked and answered, Your Honor.
3 THE COURT: That hasn't been answered yet.
4 A. I think that's a logical conclusion from my
5 answer to the earlier question.
6 Q. It's the only conclusion from your answer to the
7 earlier question; correct?
8 A. Well I don't know -- I don't know the
9 circumstances around this statement. I think if we
10 take that one sentence and look at it alone as a
11 scientist, I'm telling you that I don't think that
12 one can conduct experiments that prove that cigarette
13 smoking does not cause cancer, and so if by that you
14 mean that that's a false statement, then based on my
15 predicate, I think, you know, I would agree with
16 that.
17 Q. Okay. And that's the only conclusion that you
18 can draw from a scientific standpoint, that it's
19 false; correct?
20 A. Well I think I've already answered the question.
21 Q. And the answer is yes; correct?
22 A. I think, again, from strict scientific
23 principles, I don't see how one can prove a negative,
24 which is the tone of this statement. Given that,
25 with strict scientific approach, then I don't see

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1 that that's -- that statement, as it's written, can
2 be supported.
3 Q. Okay. And sir, it's a pretty simple question.
4 So then the answer to my question --
5 MR. WEBER: Object to the commentary, Your
6 Honor.
7 THE COURT: Yes, please no commentary.
8 MR. CIRESI: I will not comment.
9 Q. The answer, then, to my question is simply yes,
10 it's false, from a scientific standpoint; correct?
11 MR. WEBER: Your Honor, he's not allowed to
12 tell the witness how to answer the question. I
13 object to that. It hasn't been allowed.
14 THE COURT: Well don't tell the witness how
15 to answer the question, counsel.
16 MR. CIRESI: I'm not -- I didn't think I
17 did.
18 BY MR. CIRESI:
19 Q. The answer, sir, is yes, it's false from a
20 scientific standpoint; correct?
21 MR. WEBER: Same objection, Your Honor.
22 A. I don't -- I don't believe that we can say that
23 this statement is false, to use your word, from a
24 scientific standpoint. I think it's -- what --
25 What my take on this is that the science doesn't

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1 support this statement, the implication being that if
2 you're -- if you're trying -- if -- if you want to
3 explore my conclusion to this as being this statement

4 is false, meaning it's not injurious, I don't know
5 whether it is or not.
6 Q. That's not -- that's not what I asked, doctor.
7 You said the statement was not sustainable from a
8 scientific standpoint; correct?
9 A. My personal opinion is, strict scientific
10 principles, I don't see how this statement could be
11 supported.
12 Q. Okay.
13 A. Period.
14 Q. And if it could not be supported, then it is
15 false from a scientific standpoint; correct?
16 A. If you understand the way I answered your
17 question before, then I will, with that
18 understanding, agree that that's -- that that's a
19 false statement based on the fact that strict science
20 or strictly scientific approach I don't believe
21 personally can prove a negative of this sort.
22 Q. And RJR never retracted that statement; did it?
23 A. I don't know. I'm not aware of such a case.
24 Q. And you yourself don't know how to determine how
25 one product is safer than another; correct?

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1 A. I think that's a mischaracterization of what I
2 said. I think what I said was that there is no
3 accepted means or methods or group of tests that will
4 prove that one cigarette is safer than another.
5 There is certainly a lot of biological assays out
6 there that people run to provide some comparison. We
7 run some of those at Reynolds, scientists outside the
8 industry run them.
9 Q. You don't know how to determine whether one
10 cigarette is safer than another; do you?
11 A. I don't think science --
12 Q. By "you" -- excuse me, sir. By "you" I mean
13 Reynolds, not you personally.
14 A. I don't think science knows how to do that yet.
15 There is no agreement or general understanding of how
16 to do that, and so certainly scientists at Reynolds
17 don't either.
18 Q. Now have you ever -- and by "you" I mean
19 Reynolds -- ever told the public we don't know if low
20 tar cigarettes are safer than other cigarettes? Have
21 you ever done that?
22 A. I'm not aware of such a case.
23 Q. Have you ever suggested to anyone at Reynolds
24 that they make such a statement to the public?
25 A. Me personally?

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1 Q. Yes.
2 A. No, I've not personally suggested that to
3 anybody at Reynolds, because a number of -- a number
4 of people in the scientific community have suggested
5 over a long period of time, even up to very recent,
6 that they may be safer, and to me personally, common
7 sense says that less ought to be better. So low tar,
8 even if you can't prove it, low tar cigarettes, at

9 least in my -- in my gut, ought to be better.
10 Q. Well did you intend the public to believe in
11 their gut that they were better? And by "you" I mean
12 Reynolds.
13 A. As far as the smoking public, the smoking public
14 I think is quite aware of -- of low tar cigarettes.
15 I think they've reached their own conclusions from
16 the public information, from the Surgeon General's
17 reports, about what those products may represent.
18 Q. That's not what I asked you, sir.
19 A. I'm sorry, I misunderstood your question then.
20 Q. Well again, if you misunderstand my question,
21 please tell me. Okay? Is that agreeable?
22 A. I'll be happy to if I realize I'm
23 misunderstanding. I'm sorry.
24 Q. Did Reynolds intend the public to believe in
25 their gut that low tar cigarettes were better?

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1 A. Okay. I did misunderstand you. I'm sorry.
2 I'm not -- I'm not aware of R. J. Reynolds
3 intending for smokers to believe that. I think R. J.
4 Reynolds certainly was responding to consumer demand,
5 to the demand from the smoking public, and from the
6 scientific community in calls for low tar cigarettes,
7 but I'm not aware of the fact of what you asked.
8 Q. So is it your testimony that the public came
9 running to Reynolds and said we want a low tar
10 cigarette because they're safer? Is that what you're
11 saying?
12 A. No.

MR. WEBER: Objection.

14 A. That's --

15 MR. WEBER: Objection, Your Honor, it's a
16 mischaracterization and argumentative.

17 THE COURT: Well it is a little
18 argumentative.

19 Q. Did the public, through a petition or a
20 delegation, come to Reynolds and say we want a low
21 tar cigarette because it's safer? To your knowledge,
22 did they ever do that?

23 A. Not to my knowledge, because that's not the way
24 consumer product companies work. We responded to a
25 theory for reduced tar, placed it in the market, and

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1 consumers wanted it. Consumers began demanding lower
2 and lower tar products. We put it in the market. If
3 they hadn't responded and demanded those products,
4 we'd still be at 38 or 40 milligrams tar per
5 cigarette.

6 Q. Did you do -- and by "you" I mean you
7 personally -- ever do any market study to see whether
8 Reynolds reassured the public that low tar cigarettes
9 were safer? Did you ever do that?

10 A. No, I've never done that personally.

11 Q. Have you ever looked at the marketing material
12 of Reynolds to see if they were reassuring the public
13 that low tar cigarettes were safer and they should

14 smoke that rather than quit?
15 MR. WEBER: Objection, Your Honor,
16 marketing under the rules is not within the scope of
17 the direct or the cross on this witness.
18 MR. CIRESI: Your Honor, he's testified
19 that they've responded to two things, consumer demand
20 and, he says, the scientific community. Right now
21 I'm dealing just with the former.
22 THE COURT: All right. You can pursue
23 consumer demand, the statement with regard to that.
24 A. I'm sorry, can you re-ask the question, please?
25 Q. Have you ever looked at the marketing material
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1 of Reynolds to see if they were reassuring the public
2 that low tar cigarettes were safer and they should
3 smoke those rather than quit?
4 A. That low tar cigarettes were safer?
5 Q. Yes.
6 A. Reassuring?
7 Q. Yes. Did you ever look --
8 A. I --
9 Q. -- to see if Reynolds did that.
10 A. I've never specifically gone out and looked for
11 that because I've seen a fair amount of Reynolds
12 advertising, and from the advertising it's never
13 occurred to me that that may be happening.
14 Q. Did you ever look to see whether Reynolds told
15 the public that there was still a smoking
16 controversy, and that there was no proof that
17 cigarette smoking caused disease?
18 A. To the first part of your question, I can recall
19 an advertisement that talked about controversy. I
20 can't remember a case referring to the second part of
21 your question.
22 Q. And is the ad that you remember referring to
23 controversy one that you looked at because we
24 designated it for you in this case?
25 A. I have seen one ad that you designated. I've
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1 seen others a couple years ago.
2 Q. Can you direct your attention, sir, to Exhibit
3 12581, which is in exhibit one. This is a document
4 that's in evidence, it's by Claude Teague, Jr., dated
5 February 2nd, 1953.
6 A. You said 12581. Okay.
7 Q. Correct. It's toward the end, doctor.
8 A. I've got it.
9 Q. Do you have it?
10 A. Yes.
11 Q. Survey of cancer research by Claude E. Teague, 2
12 February 1953; correct?
13 A. That's correct.
14 Q. You've read this; correct?
15 A. Yes, I have. It's been a good while ago since
16 I've read it, but I have.
17 Q. And this was about one year before the Frank
18 Statement; correct?

19 A. This was in February 1953. I believe the Frank
20 Statement was sometime in '54.
21 Q. Okay. If I tell you it was January 4th, 1954,
22 will you accept that date, the Frank Statement?
23 A. I have no reason to disagree.
24 Q. Now if you direct your attention to page 12, Dr.
25 Teague in the first paragraph, last two sentences, is
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1 referring to a report of the isolation of benzopyrene
2 from the pyrolytic distillate of tobacco as reported
3 in 1941; correct?
4 A. You're in the first paragraph under C.?
5 Q. Under C., the last two sentences.
6 A. Oh, I see. I see.
7 That's what it says.
8 Q. And it reports that the benzopyrene was highly
9 carcinogenic in animal tests; correct?
10 A. That's what this document says.
11 Q. Now do you know if at any point, based on your
12 investigation into the history of RJR that you
13 testified to on direct, whether RJR did any analysis
14 from 1941 to 1953 to determine what carcinogens were
15 in its smoke?
16 A. Well I think that's relatively easy for me to
17 answer because I don't think our research and
18 development department was in existence until the
19 early '50s, as I recall, because there was staffing
20 that began in the early '50s. Dr. Teague was one of
21 the early employees that was hired.
22 Q. Fair enough.
23 So that Reynolds, who was selling cigarettes to
24 the public, didn't even have an R&D department until
25 sometime in the 1950s; is that correct?

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1 A. Well I didn't say sometime in the 1950s, I say
2 in the very early 1950s, about 19 --
3 Q. Early --
4 A. I can guess '51 or thereabouts, '52.
5 Q. Well you said you didn't want to guess or
6 speculate; didn't you?
7 A. I said that earlier, yes.
8 Q. Okay. So you don't know whether they started
9 their R&D; do you?
10 A. I don't know a specific date. I do know it was
11 in the very early '50s.
12 Q. All right. Then it's fair to state that from
13 the time RJR started as a company up to the early
14 '50s, they hadn't done any in-house analysis of what
15 carcinogens were in their smoke; correct?
16 A. There wasn't, to my understanding, a chemical
17 research group in the company of that time period up
18 until the early '50s. There was, however, an
19 analytical laboratory that supported manufacturing
20 and did a number of measurements to support
21 manufacturing and -- and process development.
22 Q. Can you point to any document which would
23 support an assertion by you that Reynolds, up to

24 1953, did any analysis of its cigarette smoke to see
25 if there were carcinogens in it?

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1 A. Oh, I didn't say that.

2 Q. Okay. Because if there was such a document, you
3 would --

4 A. I didn't --

5 Q. -- you would provide it; wouldn't you?

6 A. Absolutely. I didn't -- I didn't say that at
7 all.

8 Q. Now can you turn to page 14, and do you see the
9 conclusions that Dr. Teague draws in section five?

10 A. Yes.

11 Q. Now one year before the Frank Statement Dr.
12 Teague concluded, about halfway through that
13 paragraph, that "Studies of clinical data tend to
14 confirm the relationship between heavy and prolonged
15 tobacco smoking and the incidence of cancer of the
16 lung." Do you see that?

17 A. That's what it says.

18 Q. Did Reynolds ever disclose that to the public?

19 A. My understanding is Dr. Teague was essentially
20 the new kid on the block, and this was a literature
21 survey, so he got this from the external scientific
22 literature, certainly not from R. J. Reynolds' files,
23 because as I've already said, the research and
24 development department had just started.

25 Q. That wasn't my question. Did RJR ever tell the

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1 public that studies of clinical data tend to confirm
2 the relationship between heavy and prolonged tobacco
3 smoking and the incidence of cancer of the lung?

4 A. I guess I don't understand your question then,
5 because this was in the external literature.

6 Q. Well that's if somebody went out and read
7 medical literature; correct?

8 A. Well that's what Dr. Teague did here.

9 Q. Right. And he's a doctor who is doing that as
10 part of his duty at the company to learn about its
11 product; correct?

12 A. He went out to try to understand the medical
13 issues, the biological issues of the
14 smoking-and-health issue.

15 Q. Did Reynolds then, after Dr. Teague concluded
16 this, tell the consuming public that studies of
17 clinical data tend to confirm the relationship
18 between heavy and prolonged smoking and the incidence
19 of cancer of the lung?

20 MR. WEBER: Let me object on asked and
21 answered, and it's also beyond the scope, Your Honor,
22 this was not within the product development
23 testimony.

24 THE COURT: It's not been answered.

25 MR. CIRESI: You may answer, sir.

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1 THE WITNESS: I'm sorry, can you ask it
2 again?

3 MR. CIRESI: Yes.

4 THE WITNESS: I'm sorry.

5 Q. Did Reynolds, after Dr. Teague concluded this,
6 tell the consuming public that studies of clinical
7 data tend to confirm the relationship between heavy
8 and prolonged tobacco smoking and incidence of cancer
9 of the lung?

10 A. I'm not aware of any case where Reynolds went
11 out and informed the public of this. It was already
12 in the public domain as well that the epidemiology
13 has showed a relationship between heavy and prolonged
14 smoking and incidence of cancer of the lung.

15 Q. Did they take out an ad, like they did in the
16 Frank Statement where they said smoking wasn't
17 harmful, and say we have concluded that the clinical
18 studies tend to confirm the relationship between
19 heavy and prolonged smoking and cancer of the lung?
20 Did they take out such an ad?

21 A. I'm not aware of such an ad.

22 Q. Now Dr. Teague, right above the conclusions,
23 references the fact that cigarettes are encased in
24 paper and organic material which could possibly burn
25 or pyrolyze to give carcinogens; correct?

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1 A. That's what he says.

2 Q. And he says the same applies to the glue and ink
3 used on the paper; correct?

4 A. That's what he says.

5 Q. And you mentioned something about additives, and
6 we'll get into that, but the Reynolds company doesn't
7 give to the government information on additives on
8 paper or filters; does it?

9 A. In the materials themselves, I believe there's
10 some that are, as I recall.

11 Q. Can you point to any document that would confirm
12 your statement that Reynolds provides to the
13 government the additives on paper or filters?

14 A. We're -- we're really getting out of my area,
15 but my recollection is that there is some tobacco
16 flavors that are in filters that may be on the -- on
17 the list that's turned over to the Department of HHS.
18 I may be wrong, but that's my recollection.

19 Q. You mean there may be an additive that's on
20 tobacco that's also on the paper; is that what you're
21 saying?

22 A. Or filter --

23 Flavors that are actually placed in the filter
24 at very low levels.

25 Q. Okay. Other than that, the tobacco

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1 companies -- and I'm specifically talking about
2 Reynolds -- does not provide to the government
3 information regarding additives used in either the
4 filter or the paper; does it?

5 A. I'm not aware of such a case. I do know that we
6 test our papers and other materials, including
7 filters, and -- and do complete -- the same as we do
8 for additives, we evaluate the scientific literature,
9 we conduct pyrolysis studies on cigarette papers
10 where necessary, we look at biological testing where
11 necessary.

12 Q. That's not what I asked you.

13 A. I'm sorry. What did you ask me?

14 Q. Okay? Reynolds does not provide the additives,
15 information on additives used on paper or filters
16 unless it's also used on tobacco to the FTC; does it?

17 A. That's a different question. You just said "to
18 the government," and I think I answered that
19 question.

20 Q. Does it provide it to the FTC?

21 A. No, not to the FTC.

22 Q. Does it provide it to the FDA?

23 A. Information -- I'm sorry. Information on
24 ingredients and additives are provided to the
25 Department of Health and Human Services, not FTC.

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10194

1 Q. And do you provide all of the tests you've done
2 to the Department of Health and Human Services?

3 A. All of the tests --

4 Q. The tests.

5 A. -- that we've done?

6 Q. Yes.

7 A. No, of course not.

8 Q. Now in the 1950s was Reynolds doing any analyses
9 of its paper or filter or additives?

10 A. What do you mean, "analyses?" What kind of
11 analyses are you referring to?

12 Q. Biological analyses of these to determine their
13 possible role as carcinogens or carcinogen-promoting?

14 A. I'm aware that there were some studies on
15 cigarette paper looking at chemistry differences and
16 how that may relate to biology. I'm not aware of
17 internal biological research at Reynolds dealing with
18 cigarette paper in that very narrow timeframe of the
19 '50s.

20 Q. So in the '50s they weren't doing that. Fair
21 statement; correct?

22 A. As far as I know.

23 THE COURT: Counsel, counsel, we'll have to
24 take a short recess. It will be very short.

25 THE CLERK: Court stands in recess.

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10195

1 (Recess taken.)

2 THE CLERK: All rise. Court is again in
3 session.

4 (Jury enters the courtroom.)

5 THE CLERK: Please be seated.

6 THE COURT: Counsel.

7 MR. CIRESI: Thank you, Your Honor.

8 BY MR. CIRESI:

9 Q. Can you turn to page 15 of Dr. Teague's

10 memorandum.
11 A. Yes, I'm there.
12 Q. That's in the recommendations section?
13 A. That's correct.
14 Q. And at paragraph C., Dr. Teague makes a
15 recommendation that all tobacco additives, flavorants
16 and humectants used by this company be examined
17 carefully with respect to their possible roles as
18 carcinogens or carcinogen-producing agents; correct?
19 A. That's what he says, that's correct.
20 Q. And he states in paragraph D. that "In view of
21 the facts presented in this report it is recommended
22 that management take cognizance of the problem and
23 its implications to our industry, and that positive
24 research action be planned and initiated without
25 delay." Correct?

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10196

1 A. That's what he says, that's correct.
2 Q. And sir, you understand that RJR had and has a
3 duty to know the hazards and dangers of its product;
4 correct?
5 A. I think R. J. Reynolds has a clear
6 responsibility to know the medical science and to
7 understand the implications on -- on health. No
8 question about it.
9 Q. And it has a duty to look in medical journals
10 and ascertain information and disseminate that
11 information to its consumers; doesn't it?
12 MR. WEBER: Objection, Your Honor,
13 information -- or testimony about consumers and
14 disseminating information was not in the scope of
15 direct and wasn't allowed.
16 THE COURT: You may answer that question.
17 A. I'm sorry, can you repeat that question?
18 Q. Absolutely, sir.
19 It has a duty to look in medical journals and
20 ascertain information regarding its product and to
21 disseminate that information to its customers;
22 correct?
23 A. If you're calling for a legal opinion on the
24 word "duty" to disseminate information, I don't -- I
25 can't speak to that. I think the smoking public

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10197

1 certainly is aware of what we're aware of in -- in
2 the literature.
3 Q. I didn't ask you that.
4 Have you done any survey to see whether people
5 read medical journals? Have you done that?
6 A. No, I haven't.
7 Q. Are you aware of any survey conducted by the
8 Reynolds company of its customers to see if they read
9 medical journals?
10 A. I'm not aware of such a survey.
11 Q. Now do you understand that Reynolds had and has
12 a responsibility, as you said -- I'll use your
13 word -- to review the medical journals and to
14 disseminate the information that it learns about its

15 product to the consuming public?
16 MR. WEBER: Same objection, Your Honor.
17 THE COURT: You may answer that.
18 A. I think Reynolds certainly has a responsibility
19 to read and understand the medical literature. I do
20 believe that the public knows as much about
21 smoking-and-health issues, and in fact most of the
22 people in this country believe that cigarette smoking
23 causes lung cancer.
24 Q. That's not what I asked you, sir. You haven't
25 conducted --

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10198

1 A. Then I'm sorry.
2 Q. You haven't conducted any surveys as to what
3 people know at any given point of time over the last
4 40 years; have you?
5 A. I'm aware of a number of outside surveys, not R.
6 J. Reynolds surveys.
7 Q. Sir, have you conducted any polls to know or
8 learn what people might know over points in time over
9 the last 40 years; have you?
10 A. I'm not aware of any surveys that -- that are
11 conducted by R. J. Reynolds. I'm not aware of them.
12 Q. Now let's go back to my question. You
13 understand that Reynolds has a responsibility to
14 disseminate information that it learns about its
15 product to its consumers and customers; don't you?
16 MR. WEBER: Same objection, Your Honor.
17 THE COURT: You may answer it.
18 A. I don't know that R. J. Reynolds has a
19 responsibility to disseminate medical information to
20 its consumers. It clearly has a responsibility to
21 understand the medical literature and to do exactly
22 what I and my colleagues have been doing for years,
23 which is to try to address those smoking-and-health
24 issues through cigarette design.
25 Q. Sir --

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10199

1 A. As far as informing the consumer -- the
2 consuming public, I think consumers are already quite
3 aware of most of the issues.
4 Q. Is your answer you don't know?
5 A. I --
6 Q. Because if it is, just tell me.
7 A. I think my --
8 MR. WEBER: Objection, Your Honor, the
9 question was answered.
10 THE COURT: No, the question wasn't
11 answered. You may answer.
12 Q. Is your question you don't know -- or your
13 answer?
14 A. I've --
15 You had two parts in there. I clearly agree
16 with the Reynolds responsibility for reading and
17 understanding the medical literature.
18 Q. All right.
19 A. If Reynolds has a responsibility to inform

20 consumers about that medical literature, I don't
21 know.
22 Q. You don't know. Okay.
23 Nobody in Reynolds in the 20 years you've been
24 there has told you you have that responsibility;
25 correct?

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10200

1 A. To inform consumers about medical literature?
2 I'm not aware of such a responsibility. We do inform
3 consumers about the products we sell and the
4 differences in the products we sell, and we provide
5 consumers with a range of products.

6 Q. Sir, you know that Reynolds over the last 40
7 years has attempted to say there's a controversy
8 about the medical risks of smoking; don't you?

9 MR. WEBER: Let me object, Your Honor. The
10 medical issues were beyond the scope of direct. He
11 was not -- he was not to testify about that.

12 THE COURT: No, you may answer that.

13 A. I'm aware that R. J. Reynolds has -- has
14 published advertisements, paid advertisements, or a
15 couple, or several, that have spoken to an open
16 controversy on the debate. Beyond that, I don't
17 know.

18 Q. You know they've sent letters to consumers;
19 don't you?

20 A. About?

21 MR. WEBER: Objection, Your Honor.

22 Q. About promoting a medical controversy.

23 MR. WEBER: Let me object. This is well
24 beyond the scope of direct now, Your Honor.

25 THE COURT: The objection is sustained.

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10201

1 BY MR. CIRESI:

2 Q. Sir, in dealing with your customers, you know
3 that Reynolds has communicated with them, these
4 customers who you say have demanded safe cigarettes.

5 MR. WEBER: Same objection, Your Honor.

6 THE COURT: No, this is a different
7 question.

8 A. R. J. Reynolds communicates with its customers
9 in a variety of ways, through advertising, through
10 800 numbers, through interviews. There are a number
11 of things.

12 Q. And one of those mechanisms is through form
13 letters; isn't it?

14 A. There are letters to consumers, some possibly
15 form letters, some others not form letters to
16 consumers.

17 Q. And in those letters RJR communicates
18 information concerning medical issues; correct?

19 MR. WEBER: Objection, Your Honor, it's the
20 very question you ruled on before.

21 THE COURT: No, this is a different
22 question now.

23 A. I'm not aware in form letters that we
24 communicate with our consumers on medical issues.

25 I'm not aware of that.

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10202

1 Q. Can you direct your attention -- let me retract
2 that.

3 You've never seen such a letter?

4 A. That deals with medical information?

5 Q. Correct.

6 A. I can't recall such a case that deals with
7 medical information.

8 Q. Can you direct your attention to Exhibit 18187,
9 which is in volume two. It's about two-thirds of the
10 way through, sir.

11 A. 18182.

12 Q. Correct.

13 A. It's not in my booklet.

14 THE COURT: 18187.

15 MR. CIRESI: 18187.

16 A. 18187 is in my book. I'm sorry.

17 Q. Do you have it, sir?

18 A. Yes.

19 Q. And this is a document authored by Dr. Rodgman;
20 correct?

21 A. Yes. This is an internal R. J. Reynolds report
22 authored by Dr. Rodgman.

23 Q. And you've read this report; correct?

24 A. Yes, I have. It's -- it's been a while.

25 Q. And --

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10203

1 Well you talked about it on direct; didn't you?

2 A. Yes. It's been a while since I've read this
3 thing in its entirety, but I have actually, yes.

4 Q. And it's entitled "A CRITICAL AND OBJECTIVE
5 APPRAISAL OF THE SMOKING AND HEALTH PROBLEM?"

6 A. That's correct.

7 Q. And down below in the first page under the word
8 "MEMORANDUM," Dr. Rodgman states in the first
9 paragraph, "Although the major part of the sales of
10 this Company consists of cigarettes, what the Company
11 sells is cigarette smoke. To maintain our
12 first-place position against any eventuality, we
13 should be first in acquisition of information
14 concerning the composition and physiologic effects of
15 cigarette smoke." Correct?

16 A. That's what he says, that's correct.

17 Q. And -- and he's referring, in part, to what Dr.
18 Teague was referring to back in 1953; correct?

19 A. I think things are quite different in 1962. I
20 think there's some overlap in the issues. He's
21 certainly suggesting that we should be first in
22 understanding as much as possible about smoke
23 composition and the health aspects of cigarette
24 smoking. That's what it says.

25 Q. And that's what Dr. Teague was referring to back

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10204

1 in 1953; correct?
2 A. Doctor -- Dr. Teague made similar
3 recommendations.
4 Q. And can you direct your attention to page nine
5 of this document.
6 A. Okay.
7 Q. And do you recall reading this previously?
8 A. Yes.
9 Q. Okay. I'd like to direct your attention to the
10 first full paragraph. "It has been repeatedly stated
11 that some scientists discount the cigarette
12 smoke-lung cancer theory. This is true. But it
13 should be noted that many of those quoted in this
14 regard are on record with contrasting views." Do you
15 see that?
16 A. Yes.
17 Q. And then he refers to some such as Berkson and
18 Little. Do you see those?
19 A. Yes.
20 Q. And he quotes from Berkson; does he not?
21 A. In the next paragraph.
22 Q. Now in your investigation into smoking and
23 health and cigarettes, did you learn that in 1958 the
24 vast majority of scientists and the industry itself
25 felt that cigarette smoking caused lung cancer?

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10205

1 MR. WEBER: Let me object, Your Honor, to
2 the statement "investigation into smoking and
3 health." Dr. Townsend did not testify about smoking
4 and health or about an investigation on that, he
5 talked about product development and learning about
6 the research efforts in that regard.
7 THE COURT: Well he certainly testified
8 about this document, so the document is open.
9 MR. WEBER: Yeah. But my objection is not
10 the document, it's just the preface to the question.
11 THE COURT: All right. Okay. I think you
12 should probably rephrase that, counsel.
13 BY MR. CIRESI:
14 Q. In your investigation, sir, into the design of
15 cigarettes, you were looking at it from the
16 standpoint of reducing carcinogens; correct?
17 A. Reducing the number of chemical constituents,
18 including some that were thought to be carcinogenic.
19 Q. One is benzopyrene; correct?
20 A. Benzopyrene was, I said, the first effort of
21 reducing those kind of compounds.
22 Q. That's still in cigarettes; right?
23 A. At much lower levels.
24 Q. It's still there; correct, sir?
25 A. It's still present at much lower levels.

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10206

1 Q. But you don't know what level causes disease; do
2 you?
3 A. No, I don't. I'm -- I'm not sure any scientist
4 does, even experts in biology or toxicology.
5 Q. Now can you direct your attention to page 13 of

6 this exhibit. And do you see here that there's
7 reference to "Members of the Research Department have
8 studied in detail the cigarette smoke composition?"
9 A. Yes.
10 Q. And you referenced this on your direct; correct?
11 A. Yes, I did.
12 Q. You said you went back and looked up to see
13 whether or not any of these were published; correct?
14 A. Yes, specifically to -- what I said in direct,
15 it was the sentence, "However, much data remain
16 unpublished because they are concerned with
17 carcinogenic or cocarcinogenic compounds." Then the
18 list of references that are in parentheses after that
19 are the references that I went back and dug out from
20 our files at Reynolds, evaluated each of those, and
21 found that some of them did -- were concerned with
22 the identification of smoke constituents, some were
23 concerned about the development of new analytical
24 test methods, some were concerned with selective
25 filtration additives, additives that could be put in

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10207

1 the filter to selectively remove some of the -- some
2 of the compounds in smoke, and then -- so --
3 So there were a variety of topics being
4 discussed in this.
5 Q. Yeah. I'm talking about the ones concerned with
6 carcinogenic or cocarcinogenic compounds. Do you see
7 that?
8 A. Yes.
9 Q. Okay. Now you said you ascertained that some of
10 those were published subsequent to this memo;
11 correct?
12 A. Of those lists, after the word "carcinogenic or
13 cocarcinogenic compounds," of that list, beginning
14 with reference 23 all the way to 114, there
15 were -- all of the constituents that referred to in
16 there with the exception of cholanthrene was already
17 published in the literature from the PAH group of
18 compounds, and all of the phenols except eugenol and
19 iso-eugenol were already in the literature on the
20 phenol category. And then I said that the eugenol
21 and iso-eugenol were already published by -- were
22 published by Rodgman in 1964, just after this report.
23 Q. Two years after the report; correct?
24 A. This is a 1962, so that would make it two years.
25 Q. All right. Now the other chemicals that you

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10208

1 said were in the literature, they weren't published
2 by RJR, they were published by others; correct?
3 A. Of these specific -- these specific polycyclic
4 aromatic hydrocarbons, they were published by others.
5 Q. Correct. Now --
6 But RJR didn't tell the consuming public that
7 it, it had found carcinogenic substances in its
8 products; correct?
9 A. The consuming public?
10 Q. Yes.

11 A. No, but Reader's Digest did.
12 MR. CIRESI: Your Honor, I'm going to move
13 to strike the last portion as non-responsive.
14 THE COURT: It is non-responsive.
15 THE WITNESS: I'm sorry, Your Honor.
16 BY MR. CIRESI:
17 Q. Again, doctor, if you don't understand my
18 question, maybe you could just tell me.
19 A. I'm trying to understand your question.
20 Q. Okay. Did you -- did you hear me say anything
21 about Reader's Digest?
22 MR. WEBER: Objection, Your Honor.
23 THE COURT: All right, counsel, let's move
24 on.
25 Q. Now Dr. Rodgman goes on and states, "If a
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10209

1 company pled 'not guilty' or 'not proven' to the
2 charge that cigarette smoke (or one of its
3 constituents) is an etiological factor in the
4 causation of lung cancer or some other disease, can
5 the company justifiably assume the position that
6 publication of data pertaining to cigarette smoke
7 composition or physiologic properties should be
8 withheld because such data might adversely affect the
9 company's economic status when the company has
10 already implied in its plea that no such etiologic
11 effect exists?" Do you see that?
12 A. I see that sentence.
13 Q. Now what Dr. Rodgman was talking about there was
14 RJR's data, not somebody else who published in an
15 obscure medical journal; isn't that right, sir?
16 A. That would be my take on it.
17 Q. Because you can only withhold publication of
18 your own data; correct?
19 A. Well I think that would be my take on it.
20 Q. Now at this time, the evidence showing that
21 cigarette smoking caused disease, according to Dr.
22 Rodgman, was overwhelming; correct?
23 A. I'm sorry, where are you?
24 Q. You go to page seven.
25 A. Okay. I'm there.

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10210

1 Q. "The Evidence to Date.
2 "Obviously the amount of evidence accumulated to
3 indict cigarette smoke as a -- as a health hazard is
4 overwhelming. The evidence challenging such an
5 indictment is scant." Do you see that?
6 A. I see those two sentences.
7 Q. Now did RJR ever make that statement right up to
8 today, if you know?
9 A. My interpretation of these two sentences is that
10 Rodgman was clearly acknowledging that the evidence
11 in epidemiology associating cigarette smoking with
12 lung cancer is overwhelming. There's no question
13 about that. And yes, my company has said that.
14 Q. When did RJR state that the evidence is
15 overwhelming and we knew that since 1962? When did

16 they say that?
17 A. I didn't say that. I said that R. J. Reynolds
18 has made the statement that the epidemiology is in
19 place that -- that makes -- that makes it clear that
20 cigarette smoking is a risk for lung cancer.
21 Q. That's not what I asked you. When did they
22 state that the evidence is overwhelming?
23 A. Using those specific words?
24 Q. Yes.
25 A. I'm not aware of the company using those
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10211

1 specific words. The concept has been conveyed
2 though.
3 Q. Can you direct your attention to Exhibit 12667.
4 A. I'm there.
5 Q. Is this one of the ads that you were talking
6 about?
7 A. Yes.
8 Q. This is a 1984 ad; correct?
9 A. Yes, copyrighted 1984.
10 Q. And do you know where this was published?
11 MR. WEBER: Your Honor, I'd object to this.
12 The whole subject of marketing, that was off limits
13 on direct. It's beyond the scope.
14 THE COURT: Well I'll see what questions
15 are asked.
16 BY MR. CIRESI:
17 Q. Do you know where this was published, sir?
18 A. I don't know specifically, no.
19 Q. If I tell you that Reynolds has advised us it
20 was published in Better Homes and Garden, Newsweek,
21 People, Red Book, Time, TV Guide, USA Today, U.S.
22 News & World Report, the Wall Street Journal, the New
23 York Times and the Washington Post, would you accept
24 that?
25 A. I have no reason to doubt it.
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10212

1 Q. Now you stated that with regard to consumers and
2 communications with them that you were aware of, this
3 is one of the type of documents that you've seen;
4 correct?
5 A. Yes. I also saw it when you designated it for
6 this cross-examination.
7 Q. And in this, Reynolds told the United States
8 that "Over the years you've heard so many negative
9 reports about smoking and health, and so little to
10 challenge these reports, that you may assume the case
11 against smoking is closed.
12 "This is far from the truth.
13 "Studies which conclude that smoking causes
14 disease have regularly ignored significant evidence
15 to the contrary." Do you see that?
16 A. I see that.
17 Q. Now this is 22 years after Dr. Rodgman's
18 internal memorandum; correct?
19 A. That would make it 22 years.
20 Q. Did Reynolds, to your knowledge, ever take out

21 any type of ad like this and state what they knew 22
22 years before?

23 MR. WEBER: Objection, Your Honor, it's
24 both asked and answered and argumentative.

25 THE COURT: You may answer if you know.

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10213

1 A. Are you speaking in 1962?

2 Q. Or in 1984.

3 A. You said 22 years before.

4 Q. What they knew 22 years before.

5 A. Okay. Can you re-ask the question, please?

6 Q. Sure.

7 A. I want to make sure I've got it right.

8 Q. Did Reynolds ever take out an ad like this in
9 1984 and state what they knew 22 years before as
10 evidenced by Dr. Rodgman's memorandum?

11 A. If your question is did R. J. Reynolds take out
12 an ad and explain to the public about the
13 epidemiology, making it clear that cigarette smoking
14 is a risk for lung cancer, I'm not aware of such an
15 advertisement. That was already known, however.

16 Q. Can you turn to Exhibit 12336.

17 THE COURT: Counsel, we'll need to recess
18 at this time.

19 MR. CIRESI: All right.

20 THE CLERK: Court stands in recess, to
21 reconvene tomorrow morning at 9:30.

22 (Recess taken.)
23
24
25

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